THE INFLUENCE OF PSYCHOLOGICAL SKILLS ON THE SELF-EFFICACY PERCEPTIONS OF ELITE PRE-ELITE AND NON-ELITE TRIATHLETES

A thesis submitted in partial fulfilment
of the requirements for the degree
of
Masters of Arts in Psychology
at the
University of Canterbury

by
A.B. ALLARDYCE

University of Canterbury
1992

CONTENTS

ABSTRACT

Quantitative and qualitative measures were used to assess the psychological skills of nine Elite, six Pre-elite, and four Non-elite triathletes, as well as the benefits derived by each group from these skills. It was hypothesized that the Elite group would have more developed psychological skills and greater self-efficacy perceptions than the Pre-elite and Non-elite groups, and that psychological skills would contribute to the self-efficacy perceptions of the three groups. Results indicated that the Elite group had greater self-efficacy perceptions than the Pre-elite or Non-elite groups, but there was only partial support for the hypothesized psychological skills differences. Although the Elite group was found to have more developed psychological skills than the Non-elite group, there were few skill differences between the Elite and Pre-elite groups. Results generally supported the hypothesized relationship between psychological skills and self-efficacy. However not all skills were equally influential. Based on the similarities between the Elite and Pre-elite groups in terms of psychological skills, it was suggested that other factors might have accounted for the greater self-efficacy perceptions of the Elite group relative to the Pre-elite group. Nonetheless it was suggested that psychological skill differences might have contributed to the Elite and Pre-elite groups' greater self-efficacy perceptions relative to the Non-elite group.

CHAPTER 1

INTRODUCTION

Over the last fifteen years research in the area of sport psychology has increasingly sought to identify factors that promote superior athletic performance. One factor consistently found to be related to top level performance has been self-confidence (Mahoney & Avener, 1977; Meyers, Cooke, Cullen, & Liles, 1979; Gould, Weiss, & Weinberg, 1981; Highlen & Bennett, 1983; Hemery, 1986; Mahoney, Gabriel, & Perkins, 1987; Mahoney, 1989; Spink, 1990). Despite this finding, little research has been conducted to identify the factors which promote self-confidence (Spink, 1990). However one theory which could be used to promote research in this area is Bandura's (1977; 1986) concept of self-efficacy, a situationally specific form of self-confidence, which is hypothesized to be an important determinant of performance. Significantly, Bandura outlines both informational sources, and procedures operating via these sources, as means to alter self-efficacy perceptions.

The following chapter sets out literature relevant to Bandura's theory of self-efficacy, literature in the sport and motor performance areas which have tested the propositions in that theory, and finally, literature relevant to the hypothesized relationship between psychological skills and self-efficacy[1]. Chapter three presents the research aims and hypotheses, and secondly the research method employed in this study. Chapter four contains a combined results and discussion section. Chapter five presents a general discussion and is followed by conclusions drawn from this study in Chapter six.

---

[1] Psychological skills refer to mental techniques such as goal-setting, imagery, anxiety control, and the ability to successfully concentrate during competition. According to research findings these techniques appear to differentiate successful from less successful athletes (Mahoney, 1989).

CHAPTER 2

LITERATURE REVIEW

A) THEORY OF SELF-EFFICACY

Self-efficacy is a situationally specific form of self-confidence[2], which Bandura (1986, p.391) defines as,

> "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance".

Given adequate incentives and motivation, self-efficacy is hypothesized to be a significant determinant of performance accomplishment due to its influence on behaviour, thought patterns, and emotional reactions experienced in stressful situations. In turn, performance accomplishments causally affect self-efficacy. Thus self-efficacy and performance form a reciprocal causal relationship.

Self-efficacy affects not only the choice of behaviour but also expenditure of effort, and length of perseverance in the face of obstacles and aversive consequences (Bandura, 1977; 1986). Individuals who have a stronger percept of self-efficacy regarding a particular task, are more likely to undertake that task than one where they feel less efficacious. Additionally, those individuals who have a relatively stronger belief in their ability, are likely to expend greater effort and continue longer when confronted with difficulties. According to Bandura (1977; 1986), the above effects (choice of behaviour, expenditure of effort, and persistence) are due to

---

[2] Throughout this thesis the terms self-efficacy and self-confidence are used inter-changeably, both denoting a situationally specific (e.g., confidence in skiing), rather than either a global form (e.g., confidence in overall athletic ability) of self-confidence or a trait.

the more positive thought patterns and emotional reactions elicited by a strong sense of self-efficacy. Faced with difficulties, individuals with low percepts of self-efficacy tend to dwell on their perceived deficiencies, which in turn will promote stress and interfere with the effective use of necessary coping strategies (Bandura, 1977; 1986). Furthermore, those who perceive themselves as inefficacious are likely to ascribe set-backs to internal and relatively permanent factors, such as lack of ability, whereas those high in self-percepts of efficacy are likely to attribute set-backs to internal and temporary factors such as lack of effort (Bandura, 1977; 1986).

SOURCES OF EFFICACY INFORMATION

Bandura (1977; 1986) suggests that four sources of information affect judgments of self-efficacy: performance attainments, vicarious experience, verbal persuasion, and physiological states. However these four sources of information are not seen as inherently enlightening, and become instructive only through cognitive appraisal which is influenced by the personal, social, situational, and temporal circumstances under which events occur. For example, the same level of physiological arousal may have quite different effects on two individuals' self-efficacy perceptions, due to their differing cognitive appraisals of that physiological arousal. The first individual may interpret their heightened physiological arousal as optimal prior to competition, which will in turn boost self-efficacy. The second individual in contrast, may view their heightened physiological arousal as indicative of impending failure, and may feel less self-efficacious as a result. Furthermore, the different cognitive appraisals of these two individuals are likely to have been influenced by the personal, social, situational factors, and temporal circumstances under which this hypothetical event occurred. For example, in prior events the first individual may have found that an elevated arousal level led to optimal performance, while the reverse may have been true for the second individual.

Performance attainments are hypothesized to exert the most powerful influence on self-efficacy as they are based on authentic mastery experiences (Bandura, 1977; 1986). However the influence of performance accomplishments on self-efficacy is mediated by task difficulty, expenditure of effort, degree of external aid, temporal patterns of success and failure, and rate of improvement. For example Bandura (1977; 1986) would suggest that the following variables tend to enhance the influence of performance accomplishments on self-efficacy; performance successes on difficult tasks, tasks completed with low levels of effort expenditure, tasks completed with low levels of external aid, task successes early in the learning process, and experience of progress despite occasional set-backs. In contrast, performance successes on easy tasks, tasks completed with high levels of effort expenditure, tasks completed with high levels of external aid, and task successes completed later in the learning process after repeated early failures, could be expected to reduce the influence of performance attainments on self-efficacy (Feltz, 1988).

Although not as potent an influence on self-efficacy, vicarious experiences provide relevant information derived from the observation or visualization of people performing similar activities (Bandura, 1977; 1986). Such experiences allow individuals to determine if they possess the necessary skills to achieve success. For example, a person observing another, who is perceived as similar in ability perform a task successfully, tends to raise the individual's efficacy expectations for that particular task, whereas watching a similar model fail will tend to lower efficacy expectations (Bandura, 1977; 1986). In addition to information derived from a process of social comparison, vicarious experiences can affect self-efficacy by conveying effective performance strategies, tactics, or corrective actions (Bandura, 1986). Thus, a pistol shooter may observe the performance of a fellow competitor and from this observation determine the compensatory adjustment necessary in strong cross winds.

As with performance accomplishments, a number of factors affect the degree of influence of vicarious experiences on self-efficacy. The following variables could be expected to increase the influence of vicarious experiences on self-efficacy; relatively few experiences on which to evaluate perceived efficacy, a strong similarity between the model and the observer in terms of past performances or model attributes which are perceived as predictive of success such as age and sex, observing a number models, and observing clear outcomes of modelled behaviour (Bandura, 1977; 1986).

The third source of efficacy information, verbal persuasion, is used to convince individuals that they have the necessary skills to master a task or situation (Bandura, 1977; 1986). For example, a coach may try to persuade an athlete that he/she has the ability to beat a particular competitor, or a teacher may try to persuade a pupil that by working harder he/she can successfully learn a new skill.

As with vicarious experiences, verbal persuasion tends to be less influential in terms of self-efficacy than performance accomplishments (Bandura, 1977; 1986). However, the influence of verbal persuasion will be greater if there is little experiential evidence of ability on which to base self-efficacy expectations, if the heightened appraisal is within realistic bounds, and if the persuader is perceived as credible, prestigious, trustworthy, and an expert in the relevant field (Bandura, 1977; 1986).

The last source of efficacy information is physiological arousal. Bandura (1977; 1986) suggests that individuals are more likely to expect performance success if they are not beset by perceived aversive levels of arousal. Although not stated explicitly in his theory, Bandura views physiological arousal as reciprocally related to self-efficacy (Feltz, 1988). Bandura (1977) states that physiological arousal is both a source of efficacy information and a co-effect of avoidance behaviour. Thus Bandura views anxiety and behaviour as not directly causally related, the influence of anxiety on behaviour being mediated by self-efficacy.

Amongst those factors that are likely to determine the impact of physiological arousal on self-efficacy are the level of arousal, the interpretation of arousal, and prior experiences of how arousal affects performance (Bandura, 1977; 1986). High levels of perceived arousal, which are interpreted as indicating lack of ability, and prior experience that high arousal can be harmful to performance, will tend to reduce perceived self-efficacy, whereas high levels of arousal which are interpreted as indicating mental and physical preparedness, and prior experiences indicating that high arousal facilitates performance, will tend to to enhance perceived self-efficacy (Bandura, 1977; 1986).

In addition to autonomic arousal, levels of fatigue, windedness, aches, and pains, in activities involving strength and stamina are likely to be used as indicators of physical in-efficacy (Bandura, 1986). Although not explicitly stated by Bandura factors such as the level of these symptoms, their interpretation, and previous experiences of how they affect performance, could be expected to influence their impact on self-efficacy. High levels of these symptoms, their interpretation as signals of impending injury, and previous poor performances when these symptoms were present, are likely to have a negative impact on self-efficacy.

The last source of physiological information hypothesized to exert an influence on self-efficacy is affective arousal[3]. Bandura (1977; 1986) suggests that mood states affect cognitive processing and retrieval of information. Sad mood states promote the recall of previous failures, and consequently undermine perceptions of self-efficacy. Positive mood states have the opposite effect.

---

[3] Bandura (1986) includes mood states under the general heading of "Physiological Efficacy Information". According to Bandura (1986) mood states can affect cognitive processing and retrieval of information. Bandura (p.408) uses as an example the influence of sad mood states on the retrieval of information. Sad moods leading to thoughts of past failures and reducing perceptions of self-efficacy, happy moods in contrast leading to recollections of prior successes thus enhancing self-efficacy.

MEASUREMENT OF SELF-EFFICACY

Bandura and Adams (1977) recommend assessment of the level, strength, and generality of self-efficacy. The term "level" refers to the absolute level of performance one feels capable of attaining. For example a sprinter may feel that the fastest time he can possibly run is 10 seconds for the hundred metres. "Strength" refers to one's degree of confidence in attaining specified levels of performance and is typically measured on a 100 point probability scale ranging from great uncertainty to great certainty. The sprinter may regard 10 seconds as an improbable time, whereas 10.6 seconds may be viewed with greater certainty. "Generality" refers to the number of tasks/behaviours in which people feel efficacious. Often self-efficacy in a particular domain will generalise to another domain, particularly if there are similarities between the two. The sprinter who feels efficacious in the 100 metres may also feel similarly about the 200 metres given the similar physical requirements of both events.

B) SELF-EFFICACY, SPORT AND MOTOR PERFORMANCE

This section sets out research covered in the sport and motor performance literature with a view to determining:

- The relationship between self-efficacy and performance.
- The influence of performance accomplishments, vicarious experience, verbal persuasion, and physiological arousal on self efficacy.
- The relationship between psychological skills and self-efficacy.

SELF-EFFICACY PERFORMANCE RELATIONSHIP

As noted by Wurtele (1986) and Feltz (1988) in reviews of self-efficacy and its relationships with athletic performance, the vast majority of studies have found significant relationships exist. However most of these studies have been correlational in nature and do not demonstrate a causal relationship (Feltz, 1988). Nonetheless, some experiments employing path analysis techniques have directly investigated this suggested causal relationship (Feltz, 1982; Feltz & Mungo, 1983; McCauley, 1985).

Both Feltz (1982), and Feltz and Mungo (1983) in their studies of diving performance, found that there was a reciprocal causal relationship between self-efficacy and performance. The relationship however was not equally reciprocal, with performance over a series of diving trials becoming more of a cause, and less of an effect of self-efficacy. In trying to explain these results, Feltz (1988) suggested that under the artificially invariant conditions found in these experiments, self-efficacy may be less influential than it would be in real life situations, which are characterized by greater variation in circumstances, such as sporting venues ("home" v.s "away" fixtures) and numbers of spectators.

A similar finding was reported by McCauley (1985) who investigated the effect of three modelling techniques on self-efficacy expectations and performance of a gymnastic skill. Although efficacy expectations were significant predictors of gymnastic performance, McCauley also found direct effects of modelling technique on performance. These findings and those of Feltz (1982), and Feltz and Mungo (1983), suggest that although self-efficacy is a significant determinant of performance it is not the sole one. However as Bandura has stated (Bandura, 1984, p.251; Bandura, 1986, p.425), commonality of mechanism does not imply exclusivity of mechanism. Bandura suggests rather, that perceived efficacy operates in concert with other mechanisms, such as goal-setting, in the regulation of behaviour (Bandura and Cervone, 1983).

THE INFLUENCE OF PERFORMANCE ACCOMPLISHMENTS, VICARIOUS EXPERIENCES, VERBAL PERSUASION, AND PHYSIOLOGICAL AROUSAL ON SELF-EFFICACY

Performance Accomplishments

In a number of experiments pre-existing self-efficacy has been successfully changed via performance accomplishment (Weinberg, Gould, & Jackson, 1979; Weinberg, Yukelson, & Jackson, 1980; Weinberg, Gould, Yukelson, & Jackson, 1981; Weinberg, 1986; Feltz & Riessinger, 1990). In these studies subjects competed on a leg strength task under one of two experimental conditions. Subjects either competed against an experimenter's confederate who claimed to have weak knee ligaments and subsequently demonstrated a lower level of objective performance (high-manipulated self-efficacy), or subjects competed against a track athlete confederate who demonstrated a higher level of objective performance (low-efficacy performance manipulation). In all studies, subjects from the high efficacy manipulation groups had significantly greater performance expectations for a subsequent and related leg strength task, than those for subjects from the low-efficacy manipulation group.

Other studies have highlighted the greater influence of performance accomplishments relative to other sources of efficacy information (Feltz, Landers, & Raeder, 1979; Feltz & Riessinger 1990; Gould, Hodge, Peterson, & Giannini, 1989). Feltz et al. (1979) examined the relative effectiveness of participant (performance accomplishment), live (vicarious experience), and videotaped modelling (vicarious experience) in teaching a high avoidance[4] springboard diving task. It was found that participant modelling had a significantly greater impact on efficacy expectations and diving performance than the other two treatment conditions.

---

[4] The term "high avoidance" was coined by Feltz, Landers, & Raeder (1979) to describe the withdrawal reaction of a novice who may perceive a task or situation as potentially dangerous.

Studies by Feltz and Riessinger (1990), and Gould et al. (1989), asked subjects to identify the bases of their efficacy beliefs. The results again suggested that performance accomplishments provide the most influential source of efficacy information. Feltz and Riessinger questioned subjects as to the basis[5] of their efficacy expectations prior to a leg endurance task, and found that 86% based their beliefs upon performance accomplishments (e.g "I've had experience with weight-lifting"), 1.5% on vicarious information (e.g "My comparison with other guys"), 8% on verbal persuasion (e.g "I told myself I could do it"), and 9% on physiological states (e.g "I'm in poor shape right now"). Similarly, Gould et al. asked coaches to evaluate various strategies which had been associated with self-efficacy in sport research literature. Coaches assigned higher effectiveness ratings to performance-based techniques, such as instruction-drilling, than to non-performance based techniques, such as utilizing peer models, mental imagery, re-attribution of physiological arousal, and relaxation procedures. This result was seen by Gould et al. as consistent with Bandura's theory of self-efficacy which suggests that performance attainments have a greater impact on self-efficacy perceptions than vicarious experiences, verbal persuasion, or physiological arousal.

Although goal-setting may influence self-efficacy via a number of sources, for example via its effect on physiological arousal, with unrealistic goals tending to promote heightened and non-optimal levels of anxiety (Bar-Eli, Tenebaum, & Elbaz, 1989), it may also affect self-efficacy via performance accomplishments. Realistic goal setting, an emphasis on process[6] in addition to outcome goals, and an emphasis on proximal as well as distal goals[7] have been suggested as

---

[5] The ratings quoted by Feltz and Riessinger were non-exclusive. Thus, subjects were not limited to reporting only the most significant influence.

[6] Process goals such as hitting deep second serves in tennis provide another method of enhancing self-efficacy independent of more variable outcome goals such as winning a match, or beating a particular opponent.

[7] Proximal goals refer to short term goals such as aiming to increase the number of sprints undertaken in each training session. These proximal goals serve to create interest, generate greater effort, and increase persistence towards distal/long term goals (Miller & McCauley, 1987, p.107) such as selection for an athletics team.

effective means of improving performance accomplishments (Feltz & Weiss, 1982; Lee, 1988; Spink, 1989). This view is consistent with Bandura's (1986) assertion that high levels of self-efficacy lead people to set higher goals, thus promoting further motivational inducements and increased performance (Lee, 1988).

In a study supporting the view that goal-setting affects self-efficacy via its influence on performance, Lee (1988) found that goal-setting had a stronger direct relationship with the game-winning percentages of nine female field hockey teams than did self-efficacy. However a study by Miller and McCauley (1987) indicates, as previously suggested, that goal-setting may influence self-efficacy via means other than solely performance accomplishments. Miller and McCauley investigated the effect of a five week goal-setting training programme on basketball free-throw shooting and self-efficacy. After the five week programme, the goal-setting group had significantly higher percepts of self-efficacy than the no-goal-setting group. However although the two groups significantly differed on a subjective measure of performance success which asked subjects how well they thought they had performed (the goal-setting group scoring significantly higher), these differences were not paralleled on objective indices of free throw shooting performance. In explaining their results, Miller and McCauley suggested that once performance limits are approached or reached, goal-setting may enhance overall consistency of performance but not necessarily each individual performance. Although Miller and McCauley make reference to the "fairly consistent performances" of the goal-trained group no statistical analyses were reported.

Vicarious Experience

A number of studies have demonstrated the effectiveness of vicarious experiences in enhancing self-efficacy (Corbin, Laurie, Gruger, & Smiley, 1984; Gould & Weiss, 1981; Lrigg & Feltz, 1991).

Gould and Weiss (1981) examined the influence of viewing a videotape of a similar or dissimilar model on a leg-endurance task. Subjects who viewed a similar model in terms of athletic ability, performed significantly better than subjects who viewed a dissimilar model, or subjects in a no-model control group. Partial support was found for the mediating role of self-efficacy in explaining subject performance differences, although other mediating variables such as motivation, activated by a process of social comparison between subject and model, were also hypothesized to have independently increased performance.

Corbin et al. (1984) also used videotaped models to try to increase the exercise self-efficacy of female subjects. Two groups, a model-exposure group, and a no-model exposure group, took part in a month-long, two day a week aerobic class. During this month the model exposure group were shown three audio-visual presentations of models, similar in terms of age and size, promoting the benefits of exercise, and suggesting that high levels of athletic ability were unnecessary for successful involvement in sport. Corbin et al. found that subjects who viewed these models showed significant increments in self-efficacy. Furthermore, a discriminant function analysis revealed that after the four week programme, the model exposure group had significantly more positive attitudes to exercise, and also significantly greater involvement in a variety of sports.

Lrigg and Feltz (1991) used live models to demonstrate to females in a sixth grade class how to climb a suspended ladder containing a third upright between its sides, and which had freedom of movement in a forward and backward direction. Lrigg and Feltz found that model skill, rather than model status (peer v.s teacher), had a greater impact on self-efficacy and performance. Subjects who viewed a skilled model had significantly higher efficacy and performance scores than subjects who viewed an unskilled model.

Verbal Persuasion

Studies examining the influence of verbal persuasion on self-efficacy and performance have produced inconclusive results. Wilkes and Summers (1984) evaluated the impact of various cognitive procedures, including positive self-efficacy statements, preparatory arousal enhancement, attentional focus, and imagery, on the performance of a leg endurance task. Although positive self-efficacy statements and preparatory arousal were found to significantly influence performance, the effect was not mediated by self-efficacy.

Weinberg (1986) also evaluated the impact of positive self-efficacy statements, but found that they failed to influence either self-efficacy or performance on a leg endurance task. However an earlier performance accomplishment manipulation may have affected this result, with the information derived from verbal persuasion being unable to override this prior influence. Examining performance on another strength related task, the bench press, Carnahan, Shea, and Davis (1990) had spotters[8] verbally encouraging a weight lifter by using exhortations such as "come on", "push", and "keep going". Such verbal cues were not found to improve performance nor to increase perceptions of self-efficacy.

Woolfolk, Murphy, Gottesfeld, and Aitken (1985) examined the effect of various forms of imagery[9] on the performance of a golf-putting exercise over a series of trials. The study design

---

[8] The function of a spotter is to provide physical assistance and often motivation in the form of verbal encouragement during the performance of a weight lifting exercise.

[9] There appears to be no consensus of opinion as regards which information source is principally influenced by imagery. In this study the following rules were used to determine which source was principally affected.
- As already stated, vicarious information is derived from observing or visualizing other individuals perform similar activities. Consequently, imagining someone else perform an activity was viewed as a form of vicarious experience.
- Although obviously not literally verbal persuasion, imagining oneself perform an activity alone or against a competitor, has been viewed as a form of persuasion (Feltz & Riessinger, 1990). This type of imagery may be used to convince subjects of their ability or inability to perform an activity successfully and was classified as a form of "verbal" persuasion.

allowed for the presence or absence of mental rehearsal of the physical movements involved in the task to be completely crossed with the imaginal depiction of task outcome. A main effect for negative outcome imagery was found, with preparational imagery having a significant effect on performance only when a negative outcome component was included. Imagining a unsuccessful task-outcome on a golf-putting task significantly reduced task performance. This effect was not mediated by self-efficacy.

Again using imagery as a form of verbal persuasion, Feltz and Riessinger (1990) compared its effect with that of performance feedback, on subjects self-efficacy perceptions and performance on a leg endurance task. Feltz and Riessinger found that over two performance trials, mastery imagery (for example holding out longer than the opponent) produced significantly greater perceptions of self-efficacy. Enhanced self-efficacy also led to significantly better performance on the first, but not on the second trial. Performance feedback alone was not found to enhance self-efficacy or performance, but, as suggested by Feltz and Riessinger, this may have been due to the lack of a personal standard/goal against which to judge performance feedback. According to Bandura (1986), for self-evaluation mechanisms to function, goals and performance feedback must both be present.

Physiological Arousal

Few studies have investigated the influence of physiological states on self-efficacy (Feltz, 1988). Those studies that have been undertaken have produced inconsistent results. Feltz (1982), and Feltz and Mungo (1983), found that actual physiological arousal (heart rate) did not significantly predict self-efficacy, but that perceived autonomic arousal, although not as strong a predictor as previous performance, was a significant predictor (Feltz, 1988).

- Imagery used to convey feelings of anger, relaxation, sadness, and happiness, was seen as providing information via physiological arousal. This is consistent with the view of Feltz (1988).

Additionally, perceived autonomic arousal, as predicted by Bandura (1977), affected performance indirectly via self-efficacy.

A second study examining the relationship between physiological arousal and self-efficacy was undertaken by Lan and Gill (1984). Included in their experiment was a cognitive manipulation, which attempted to convince subjects that anxiety was beneficial to performance. Lan and Gill evaluated whether this manipulation influenced self-efficacy, self-reported anxiety, and physiological arousal. Results suggested that the cognitive manipulation had no effect on these measures. However, prior to the manipulation, subjects had all experienced failure on the experimental task, and the re-attribution procedure may have been unable to overcome this previous performance information.

In a study examining physical performance and self-efficacy in happy and sad mood states, Kavanagh and Hausfeld (1986) found that mood states significantly influenced self-efficacy perceptions for a "push-up" task, but not for a hand strength task. Although self-efficacy and performance recordings were taken for the hand strength task, only self-efficacy perceptions were measured on the "push-up" task, thus preventing an analysis of the relationship between mood induced self-efficacy changes and performance. In explaining this lack of mood effects on the hand strength task, Kavanagh and Hausfeld (1986) suggested that the self-efficacy scores may have been unreliable, due to subjects having no prior experience on the task on which to gauge their efficacy. This lack of prior experience was contrasted with the "push-up" task where most subjects had had some prior experience.

C) THE HYPOTHESIZED RELATIONSHIP BETWEEN PSYCHOLOGICAL SKILLS AND SELF-EFFICACY AMONG ELITE ATHLETES

In an extensive study of 235 Canadian Olympic athletes who competed at the 1984 Olympic Games, Orlick and Partington (1988) conducted qualitative interviews to identify possible "success elements" common to the best performing athletes (Olympic Medalists and world champions). Certain "success elements " were found to characterize the best athletes. These included quality training, clear daily goals, extensive use of imagery, simulation training, a pre-competition plan, a competition focus plan, a procedure for competitive evaluation, and a plan for dealing with distractions. These findings were replicated by McCaffrey and Orlick (1989) who again using qualitative interviews evaluated the mental strategies employed by fourteen top professional golfers from the P.G.A (Professional Golf Association) and the L.P.G.A (Ladies Professional Golf Association), and nine golf course teaching professionals. Similar mental elements to those identified by Orlick and Partington distinguished the top professional golfers from the lesser skilled club professionals. The top professional golfers showed greater skills in terms of mental preparation for quality practice, goal setting, imagery training, practice and tournament planning, tournament focus control, distraction control, tournament evaluation, and commitment (McCaffrey & Orlick, 1989).

Other studies have attempted to quantitatively assess the possible differences in psychological skills distinguishing elite from less successful athletes. Mahoney, Gabriel, and Perkins (1987) developed the Psychological Skills Inventory for Sports (PSIS)[10] which employed fifty-one items assessing six broad themes: anxiety, concentration, self-confidence, mental preparation, motivation, and team emphasis. The fifty-one items were chosen based on the first author's work with collegiate and Olympic athletes (Mahoney, 1979, 1986; Mahoney & Avener, 1977; Mahoney, Avener, & Avener, 1983; Shelton & Mahoney, 1978) and employed a true/false

---

[10] No formal psychometric evaluations were undertaken in this study, however psychometric information derived from subsequent studies is presented in the measures subsection of chapter 3.

response format. In this study Mahoney et al. distinguished between elite, pre-elite, and non-elite athletes; elite athletes were defined as having been placed fourth or above in the American national championships or the most recent Olympics or world championships; pre-elite athletes were defined as those attending special training camps or junior national championships; and non-elite athletes were defined as belonging to university athletic teams. The results suggested that elite and non-elite athletes, could be differentiated in terms of psychological skills. Relative to the non-elite athletes, the elite athletes relied more on internally referenced and kinesthetic mental preparations, experienced fewer problems with performance anxiety, more successfully concentrated during competition, and had higher levels of self-confidence (Mahoney, 1989). Although the psychological skill differences between the elite and non-elite groups were more extensive than those between the elite and pre-elite groups, relative to the elite group, the pre-elite group had greater problems with performance anxiety, and less successfully concentrated during competition.

As these studies suggest, elite athletes appear to have more developed psychological skills. However, there is no consensus as to how these skills might promote superior competitive performances (Mahoney, 1989). One mediating mechanism that may partially account for the relationship between elite athletes' psychological skills and their superior performance accomplishments is self-efficacy. Self-efficacy's hypothesized mediational role formed the basis of the studies outlined in the previous section, which examined the impact of psychological skills such as goal-setting (Miller & McCauley, 1987; Lee, 1988), imagery (Feltz & Riessinger, 1990; Woolfolk, Murphy, Gottesfeld, & Aitken, 1985), and positive self-statements (Wilkes & Summers, 1984; Weinberg, 1986) on self-efficacy and performance. These studies were based on the principal assumption of Bandura's theory of self-efficacy, namely, that psychological procedures, whatever their form, serve as means of creating and strengthening expectations of personal efficacy, which in turn influence performance (1977, p.193). Thus, applying Bandura's theory, the more developed psychological skills of elite athletes relative to less successful athletes, may contribute to their greater self-efficacy

perceptions, with these greater self-efficacy perceptions, in turn, promoting superior athletic performance.

In summary, little research has been undertaken to identify the factors that promote self-confidence. This is somewhat surprising given the key role that self-confidence appears to play in sports performances (Feltz, 1988). However one theory of particular relevance which has generated some research in this area, is Bandura's (1977; 1986) theory of self-efficacy. According to Bandura's theory, psychological skills, whatever their form, serve to enhance self-efficacy and consequently performance. Although not all studies have supported these hypotheses, there is enough evidence to suggest that self-efficacy may act as one variable mediating the psychological skills - performance relationship.

CHAPTER 3

METHOD

A number of researchers have suggested that self-confidence/self-efficacy is an important determinant of athletic performance (eg. Feltz, 1988; Spink, 1990). Despite the acknowledged importance of this relationship, little research has been conducted to investigate possible methods of enhancing self-efficacy (Spink, 1990). The research that has been undertaken has been based largely on Bandura's (1977; 1986) theory of self-efficacy, which suggests that psychological skills serve to enhance self-efficacy perceptions. However much of this research has produced inconsistent results. Possibly contributing to these inconsistencies have been weaknesses in experimental designs. Included amongst these weaknesses have been performance manipulations which have been introduced prior to less powerful efficacy manipulations, such as verbal persuasion (Weinberg, 1986; Lan & Gill, 1984), and the use of subjects who are given insufficient time to practice and develop proficiency in the mental skills that are used to try to influence their self-efficacy perceptions. As with physical skills, psychological skills can only be perfected through extensive practice.

Despite these inconsistent findings, this study sought to further investigate the possible relationship between psychological skills and self-efficacy. However in contrast to much of the prior research, a subject population with greater experience of psychological skills was chosen. As noted by Gould, Hodge, Peterson, and Giannini (1989), researchers have often failed to utilize subjects with practical experience of these skills, such as coaches, and athletes. In an attempt to overcome this weakness, Elite, Pre-elite, and Non-elite triathletes were used as subjects. A second point of contrast to prior research, was the use of both quantitative and qualitative measures of psychological skills and self-efficacy. It was hoped that the qualitative data could be used to both clarify and expand upon the quantitative data.

The study sought to determine:

- If Elite triathletes had greater self-efficacy perceptions than less successful triathletes (Pre/Non-elite).

- If Elite triathletes had more developed psychological skills than less successful triathletes (Pre/Non-elite).

- Whether Elite triathletes' greater psychological skills could at least partially account for their higher self-efficacy perceptions.

Based on previous research findings, three formal hypotheses were tested:

Hypothesis 1

That Elite triathletes would have greater self-efficacy perceptions than Pre-elite or Non-elite triathletes.

Hypothesis 2

That Elite triathletes would have more developed psychological skills than Pre-elite or Non-elite triathletes. Although, due to a lack of research addressing this issue, no specific hypothesis was made concerning possible psychological skill differences between Pre-elite and Non-elite groups, the differentiation allowed for possible between group differences to emerge.

Hypothesis 3

That triathletes would perceive psychological skills as contributing to their self-efficacy perceptions.

SUBJECTS

Subjects were all athletes who compete in the sport of triathlon. This sport requires each competitor to complete a swimming leg, a cycling leg, and a running leg, typically in that order within one competitive event. The length of each event can vary from: a "sprint-course" event - 750 metre swim, 20 kilometre cycle, 5 kilometre run, to a "standard-course" event - 1.5 kilometre swim, 40 kilometre cycle, 10 kilometre run, and up to a "long-course" event - 3 kilometre swim, 180 kilometre cycle, 42 kilometre run.

In order to distinguish between Elite and less successful triathletes the following coding process was undertaken. A New Zealand triathlon selector rated members of a Christchurch triathlon development squad[11] as Elite, Pre-elite, or Non-elite based on the following criteria; Elite triathletes were ranked in the top ten at a national level, Pre-elite triathletes were ranked in the top ten in their respective age groups nationally, and Non-elite were not ranked nationally or at age group levels. Based on these criteria, six Pre-elite (three female, three male; average age = 17.8), and four Non-elite triathletes (three female, one male; average age = 17.75) were identified.

Additionally, the New Zealand triathlon selector provided a list of nine Elite triathletes (two female, seven male; average age = 27.75) who were based in the South Island. Of these nine Elite triathletes, eight were based in Christchurch and one in Dunedin.

---

[11] This development squad was coached by three New Zealand triathlon representatives.

MEASURES

A) Self-efficacy Questionnaire

Consistent with Bandura's recommendation that measurement of self-efficacy be tailored to the specific domain of interest, a triathlon self-efficacy questionnaire was developed[12]. The background information necessary for the development of this questionnaire was obtained from one of the coaches of the previously mentioned triathlon development squad. The coach was asked:

- What length of triathlon (ie. "sprint-course", "standard-course","long-course") each group was likely to have competed over in order to determine a distance common to all groups. This was later verified by asking the triathletes themselves.
- What world class times for a male and a female would be for that length of triathlon.
- What would be slow times for a male or a female competitor over that length of triathlon.
- What a meaningful performance time interval for estimates to be made by competitors would be over that distance (ie. three minutes, two minutes, or one minute). The coach suggested that one minute intervals, particularly for world class times, would be perceived by the triathletes as meaningful in terms of distinguishing performance accomplishments.

---

[12] See appendix 1.

Based on this information a questionnaire was developed, in which subjects were asked to estimate their level and strength of self-efficacy[13] over a 1.5 kilometre swim, a 40 kilometre cycle, and a 10 kilometre run, under the following conditions[14]:

-Swim : flat lake, still overcast conditions

- Cycle : flat course, still overcast conditions

- Run : flat course, still overcast conditions

Two forms of the questionnaire were developed, one for males and one for females. Both questionnaires listed time intervals of one minute, from 3 hours to 1 hour 47 minutes for males (73 time intervals), and 3 hours to 1 hour 57 minutes for females (63 time intervals).

Level of self-efficacy was assessed by asking the triathletes to mark the best time they felt capable of achieving. Efficacy level equalled the interval number (1-73, for males; 1-63, for females) which corresponded to the particular designated time. Female efficacy levels were converted to male equivalents by multiplying the interval number by 73/63 to give a level out of 73. Table 1 gives an example of how this conversion was applied.

---

13 The author initially considered measuring generality of self-efficacy by having subjects also rate their level and strength of self-efficacy over a "sprint-course" and "long-course" distance. However it was decided that generality of self-efficacy would not be a reliable measure given that most of the triathletes had not competed over the "sprint-course" and "long-course" distances; all three distances involve quite different physical skills in terms of endurance strength v.s explosive/speed type strength. This makes it difficult for athletes to infer level and strength of self-efficacy for these two distances ("sprint-course" and "long-course") if these were to be based on their estimates for the "standard-course" distance.

14 It was important to specify race conditions in addition to race length, as factors such as water current, wind velocity, and terrain (eg. hilly v. flat cycling course), could be expected to influence time estimates.

Table 1 - Conversion of efficacy levels.

Time	Interval Number	Efficacy Level (Male)	Efficacy Level (Female)
2.59 - 3.00	1	1	1 x 73/63 = 1.16
2.58 - 2.59	2	2	2 x 73/63 = 2.32
2.57 - 2.58	3	3	3 x 73/63 = 3.48
2.56 - 2.57	4	4	4 x 73/63 = 4.64
2.55 - 2.56	5	5	5 x 73/63 = 5.80
2.54 - 2.55	6	6	6 x 73/63 = 6.96

Strength of self-efficacy was determined by asking subjects to estimate on a scale of 1-10 (1 = unlikely to achieve the time, 5 = moderately confident of achieving the time, 10 = certain would achieve the time) how confident they felt about achieving each of the listed times. An efficacy strength score was obtained by summing the confidence ratings and dividing by the total number of times listed (ie. 63 for females and 73 for males).

B) Psychological Skills Questionnaire (Quantitative)

In order to determine whether the three groups could be differentiated in terms of psychological skills the Psychological Skills Inventory for Sport[15] (PSIS, R-5) (Mahoney, Gabriel, & Perkins, 1987) was used. Although still in the developmental stage, this measure has been used in sport psychology research to assess a broad range of psychological skills. In a study comparing elite and non-elite performers in Olympic-style weight-lifting (Mahoney, 1989) an internal consistency check of the PSIS R-5 was performed. The split-half correlation was r= .567 and the Spearman-Brown coefficient was r= .724. The Guttman (rulon) coefficient was .705 and the coefficient alpha for all items was r= .636.

---

[15] See appendix 2 for a copy of the PSIS R-5.

The PSIS R-5 questionnaire employs six sub-scales[16], four of which were used in this study:

- Motivation (7 items). Six items assessed levels of motivation and one item assessed the ability to set achievable goals.
- Anxiety (10 items). Anxiety sub-scale items measured anxiety experienced before and during an event as well as the ability to control that anxiety.
- Concentration (6 items). Concentration sub-scale items measured the ability to concentrate during an event.
- Mental Preparation (6 items). Three items measured frequency of imagery use (one item) and type of imagery (two items), the other items measured the extent of pre-competition dreams, thinking about competition within 24 hours of an event, and perceived effectiveness of pre-event preparation.

Two further PSIS sub-scales were not used. Confidence (9 items) had six items which assessed general levels of self-confidence, and three items which measured the impact of injury (one item) and poor performance (two items) on self-confidence. Although the six general items in this sub-scale could have arguably been said to measure generality of self-efficacy, the inclusion of the other three items made it unsuitable for this purpose. Given this problem, and Bandura's recommendation that a measure of self-efficacy be tailored to the specific domain of interest, it was decided not to use this sub-scale as an additional and separate measure of self-efficacy. Team emphasis (7 items) had three items which measured team emphasis per se, and the other four, the ability to get on with team-mates and coaches. This sub-scale was not used in the current study due to its lack of relevance to triathlon which is essentially an individual sport.

---

[16] See appendix 3 for a list of the items in each sub-scale.

Responses to each item were scored on a five point Likert response format with zero indicating "strongly disagree" and four "strongly agree". Items which were negatively keyed, indicating a problem or a concern, were reverse scored.

C) Psychological Skills Questionnaire (Qualitative)

A standardized interview with open-ended questions[17] was employed to provide a more in-depth analysis of the psychological skills employed by the three groups, and to determine what benefits subjects perceived that they derived from these skills. The psychological skills examined included goal-setting and motivation, anxiety levels and control of anxiety, the ability to maintain concentration, pre-event mental preparations, event distraction control, and post-race evaluations. The psychological skills explored in the questionnaire were based on an extensive review of the literature concerning psychological skill differences between successful and less successful athletes (eg. Mahoney, Gabriel, & Perkins, 1987; Orlick & Partington, 1988; Mahoney, 1989; McCaffrey & Orlick, 1989).

As well as examining these psychological skills, the questionnaire also asked subjects to outline the benefits they considered that they derived from successful goal-setting, use of imagery, pre-event mental preparations, and post-race evaluations. In order to provide a form of cross-reference check, a separate question asked subjects to list the factors that affected their self-confidence in triathlons.

The main purposes of utilizing a standardized open-ended format, as opposed to a less structured approach, were to reduce variation brought by interviewer effects, and to facilitate analysis of the data (Patton, 1990). Interviewer effects were reduced as there was little need for

---

[17] See appendix 4 for a copy of the questionnaire.

judgment in terms of choice and wording of questions[18]. Data analyses were facilitated by having a uniform and standardized format within which to compare responses from different subjects.

In addition to these open-ended questions, two closed-ended questions were included. These asked subjects to rate, on seven point scales, estimates of their anxiety levels before and during an event, and also their desired arousal levels before and during an event.

In this study it was hoped that the data from the above questionnaire could be used to expand and possibly clarify the PSIS R-5 data. This form of cross-data validity check seemed particularly important given that the PSIS R-5 instrument is still in the process of development.

D) Content Analysis

Content analysis refers to the "process of identifying, coding, and categorizing the primary patterns in the data" (Patton, 1990, p.381). However, despite very general guide-lines with regard to organizing and interpreting the data, there is no one agreed upon content analysis technique:

> "We have few agreed-on canons for qualitative data analysis, in the sense of shared ground rules for drawing conclusions and verifying their sturdiness" (Miles & Huberman, 1984:16).

---

[18] Although additional probe questions were used in this study to clarify answers, and obviously involved interviewer judgment, an attempt was made to use them sparingly.

As emphasized by Patton the choice of techniques for organizing, analyzing, and interpreting qualitative data must ultimately be based on study goals and the analytical style of the researcher.

The content analysis in this study consisted of four steps:

- The first step in the content analysis consisted of reading and re-reading the transcriptions, made from tape recordings of each interview, in order to become totally familiar with them.

- The second step consisted of setting up coding categories for each question. For example the coding categories for question 34, which asked subjects to identify the factors that contributed to their feelings of confidence, included training/event preparation, motivation level, anxiety control, previous performances, success in other sports, encouragement by others, relationships, injuries, and training.

- The third step consisted of obtaining the frequency and percentages for every coding category on each question for the three groups.

- The fourth and final step consisted of establishing intergroup similarities and differences based on the frequency and percentage data.

PROCEDURE

The triathletes were telephoned and informed of the purpose of the study, namely to examine the psychological skills they employed in competition and the benefits which they derived from these. The triathletes were told that they would receive transcriptions of their interviews and

that all information would remain confidential in terms of being associated with a particular individual. All triathletes contacted agreed to be interviewed. Interview times were arranged by phone for approximately one month later.

All interviews were conducted during February and March 1991 and took place either at the triathlete's place of work or at their homes.

At each interview the self-efficacy questionnaire was administered first, followed by the PSIS R-5, and then the qualitative interview was conducted. Answers to the open-ended questions were recorded with the triathlete's permission. Interview duration ranged from 45 minutes to 2 hours 30 minutes.

Following the interviews, transcriptions were made and a copy sent to the triathlete concerned. In addition to these transcriptions, the coaches of the triathlon squad requested that they be sent a copy of the study upon its completion.

CHAPTER 4

RESULTS AND DISCUSSION

The following combined results and discussion chapter is divided into four parts:

- Part 1, Self-efficacy.
- Part 2, Psychological Skills.
- Part 3, Benefits of Psychological Skills.
- Part 4, Factors Influencing Self-efficacy.

Within each of the four parts the results are presented first, followed by a relevant discussion. Following this, Chapter 5 presents a general discussion, and finally Chapter 6 presents study conclusions. Before presenting the results and relevant discussion, it should be noted that the small sample sizes were anticipated to make it difficult to achieve statistically significant results. Furthermore, the small sample sizes precluded statistical analysis of the qualitative frequency data.

PART 1 - SELF-EFFICACY

Two one way analyses of variance (see Table 2 for group means and standard deviations) were conducted on data from the self-efficacy questionnaire to determine if any between group differences existed on the self-efficacy level and/or strength scores, and in doing so test Hypothesis one.

Table 2 - Mean Self-efficacy Level and Strength Scores.

	Level of SE*.	Std. Dev.	Strength of SE*.	Std. Dev.
Elite	67.61	4.76	9.29	0.54
Pre-elite	49.85	18.05	6.98	2.16
Non-elite	28.88	12.36	4.24	1.34

*(Level Scores could range from 1-73; Strength Scores could range from 1-10).

Significant between group differences were found for self-efficacy level scores, $F(2, 16)=15.393$, $p=.0002$, and self-efficacy strength scores, $F(2,16)=19.338$, $p=.0001$. Pairwise comparisons of group means using Tukey's HSD, revealed that with the exception of the Elite and Pre-elite groups on self-efficacy level scores, there were significant differences between each of the groups on both self-efficacy level (Elite, m= 67.61; Pre-elite, m= 49.85; Non-elite, m= 28.88) and strength scores (Elite, m= 9.29; Pre-elite, m= 6.98; Non-elite, m= 4.24).

As can be seen from these findings, the results provide some support for Hypothesis one, that Elite triathletes would have greater self-efficacy perceptions than Pre-elite or Non-elite triathletes. With the exception of the Elite and Pre-elite groups' self-efficacy level scores, all pairwise comparisons were significant. Specifically, the Elite and Pre-elite groups anticipated that they could complete the "standard course" event significantly quicker than did the Non-elite group. Furthermore, the Elite group had a significantly greater belief in their ability to achieve the listed performance times than did either the Pre-elite or Non-elite groups, and the Pre-elite group had a significantly stronger belief in their ability to achieve the listed performance times than did the Non-elite group.

Although the difference in group means between the Elite and Pre-elite groups on the self-efficacy level scores was in the expected direction (Elite = 67.61; Pre-elite = 49.85), a Tukey test revealed that there were no significant between group differences. Possibly contributing to this result, was that the question assessing self-efficacy level asked the triathletes to indicate the best time they felt capable of achieving. Although the Pre-elite group indicated levels that were not significantly different from those of the Elite group, their self-efficacy strength scores suggested that they felt less 'certain' of achieving these times.

Overall, despite this one aberrant result, the self-efficacy findings were consistent with previous research findings which have shown that more successful athletes have higher levels of self-confidence than do less successful athletes (Mahoney & Avener, 1977; Meyers, Cooke, Cullen, & Liles, 1979; Gould, Weiss, & Weinberg, 1981; Highlen & Bennett, 1983; Hemery, 1986; Mahoney, Gabriel, & Perkins, 1987; Mahoney, 1989; Spink, 1990).

Drawing from Bandura's theory of self-efficacy (1977; 1986), the greater self-efficacy perceptions of the more successful triathletes was probably the result, most significantly, of their greater performance accomplishments. Furthermore, psychological skills may have served to enhance the more successful triathletes' self-efficacy perceptions via their influence on factors such as anxiety experienced prior to an event, and also their influence on performance accomplishments.

In trying to explain how self-confidence enhances athletic performance, Bandura (1977; 1986) suggests that self-efficacy affects factors such as expenditure of effort, and length of perseverance in the face of obstacles and aversive consequences. The greater the self-efficacy, the more effort an athlete will expend, and the longer he/she will persevere in the face of obstacles and aversive consequences (Bandura, 1986). These hypothesized relationships have been supported by studies examining the performance of subjects on a leg strength task (Weinberg, Gould, & Jackson, 1979; Weinberg, Yukelson, & Jackson, 1980; Weinberg,

Gould, Yukelson, & Jackson, 1981; Weinberg, 1986). Subjects with greater self-efficacy perceptions expended more effort and persevered longer in the face of obstacles and aversive consequences than did subjects with lower self-efficacy perceptions.

In terms of the Non-elite triathletes in this study, their lower self-efficacy perceptions may have predisposed them to either drop-out of an event when confronted by difficulties, or to lower their effort expenditure. Both these responses, due to their influence on performance accomplishments, could be expected to perpetuate the lower self-efficacy perceptions of the Non-elite triathletes. In contrast, the higher self-efficacy perceptions of the Elite and Pre-elite triathletes may have caused them to try even harder when confronted by obstacles and difficulties, thus enhancing the likelihood of successful performance accomplishments and greater self-efficacy perceptions.

PART 2 - PSYCHOLOGICAL SKILLS

The analysis of data relevant to Hypothesis two, that Elite triathletes would have more developed psychological skills than Pre-elite or Non-elite triathletes, yielded inconsistent results. The relevant data for each of the skills will be examined in turn.

A) Motivation and Goal-setting

The qualitative data indicated that although the Elite, Pre-elite, and Non-elite groups had all set both long term and short term goals, only twenty-five percent of the Non-elite group had used a specific goal setting procedure, compared with one hundred percent of the Elite group, and eighty-three percent of the Pre-elite group. The goal-setting procedure of both the Elite and Pre-elite groups relied heavily upon comparisons of their goals with those of other similar

ability triathletes, and setting goals which were consistent with the triathlete's rate of improvement. Comments by triathletes in both groups indicated that these procedures helped ensure that realistic goals were set:

> *"I've measured myself and looked at my recent performances and seen what is realistic, what I can realistically expect in the next year or so, so I very much looked at how I performed in my recent past and also realistically how much I can improve on that, or maintain that type of performance. Take it from there and I'll try and... I'm at that time in my career that I don't want to set myself goals which are going to be hard to reach because then I will be disappointed".* (Elite triathlete).

Supporting the assumption that this type of comparison promoted realistic goal-setting, both Elite and Pre-elite groups reported a moderate to high rate of goal attainment in previous seasons. Although the Non-elite group, with the guidance of their coaches, had set goals for the forthcoming season, their lack of goal-setting in previous seasons precluded an estimate of prior goal attainment.

However, despite the goal attainment of the Elite and Pre-elite groups, and the motivation to train and compete which both groups derived from this success (see page 50), a one way anova of the PSIS motivation scale (see Table 3 for group means and standard deviations), which measured goal attainment and motivation level[19], failed to reveal any significant between-group differences, $F(2, 16)=.628$, n.s.

---

[19] As mentioned in the method section the PSIS R-5 motivation sub-scale contained seven items. Six items assessed level of motivation and one item assessesed the ability to set achievable goals.

Table 3 - Mean Motivation Scores (PSIS R-5).

	Motivation*	Std. Dev.
Elite	62.00	13.97
Pre-elite	55.44	17.06
Non-elite	46.00	7.00

*(Motivation Scores could range from 1-100).

Although the lack of significant differences on the PSIS motivation sub-scale may appear surprising, the comments made by the Elite and Pre-elite groups in the qualitative interview suggested that while triathlons were important to the subjects, families, jobs, and a lack of financial recognition precluded an exclusive motivational emphasis on them:

> *"You've got to take everything into account. I teach and so I've got to take that into account as well. What I want to do with that and what I want to do relationships with other people and things like that; so I've got to bring them all into line. You can't have 100% at anything".* (Elite triathlete).

> *"Fame and fortune doesn't even come into it with triathlons in this country. There's no way you could get rich".* (Elite triathlete).

B) Anxiety

A one way anova of the PSIS R-5 anxiety sub-scale (see Table 4 for group means and standard deviations) measuring anxiety experienced before and during an event, as well as the ability to control that anxiety, revealed significant between-group differences, $F(2, 16) = 5.02$, $p=.02$.

Table 4 - Mean Anxiety Scores (PSIS R-5).

	Anxiety*	Std. Dev.
Elite	65.44	9.15
Pre-elite	63.50	15.55
Non-elite	46.50	5.45

*(Anxiety Scores could range from 1-100).

Pairwise comparisons (Tukey HSD) revealed significant differences between the Elite and Non-elite groups, and Pre-elite and Non-elite groups. Despite these significant differences, a closed-ended question included in the qualitative questionnaire, measuring anxiety levels experienced the evening before, two hours before, thirty minutes before, and during, an event, failed to reveal any significant between group differences, $F(2, 16) = 2.896$, n.s.

However despite these inconsistent results, the qualitative data did suggest that the Elite and Pre-elite groups focussed more extensively on attempting to control anxiety before an event than did the Non-elite group. This varied across time intervals. Although the evening before an event neither the Non-elite group (0%), nor the Pre-elite group (16%), significantly focussed on anxiety control relative to the Elite group (67%), half an hour before the event both the Elite

and Pre-elite groups focussed more extensively on anxiety control than did the Non-elite group (Elite, 83%; Pre-elite, 67%; Non-elite, 25%).

Possibly contributing to the lack of focus on anxiety control amongst the Non-elite group was their lack of anxiety control techniques. Compared to only twenty-five percent of the Non-elite group, one hundred percent of both the Elite and Pre-elite groups used one or more anxiety control techniques. Although a number of different techniques were employed by both of these groups, the most popular were positive thinking and/or listening to music:

> *"Before an event if I'm anxious, I listen to tapes, that calms me down a bit. Also I go through events where I have performed well. Sort of say to myself that I can do it".* (Pre-elite triathlete).

> *"Deep breathing and thinking about something positive, something positive that I have done, something positive that I'm about to do. Thinking about something positive, positive things that I've been involved with".* (Elite triathlete).

C) Concentration

A one way anova of the PSIS R-5 (see Table 5 for group means and standard deviations) concentration sub-scale measuring the ability to concentrate during an event failed to reveal any significant between-group differences, $F(2, 16) = .472$, n.s.

Table 5 - Mean Concentration Scores (PSIS R-5).

	Concentration*	Std. Dev.
Elite	43.55	14.93
Pre-elite	52.83	11.87
Non-elite	45.75	26.11

*(Concentration Scores could range from 1-100).

The qualitative data tended to support the above finding, with triathletes in all groups reporting difficulty maintaining concentration. The following quote made by an Elite triathlete was typical of those made by members from each group:

> *"During the event I try and concentrate on what I'm doing, because I do get side-tracked quite easily which is very annoying. You know, I start thinking about completely irrelevant things".* (Elite triathlete).

However despite this similarity between the groups, the qualitative data suggested that there were differences in terms of the specific focus the groups attempted to maintain during an event, and during training. During an event and during training, the Elite (event, 100%; training, 100%) and Pre-elite groups (event, 83%; training, 100%) concentrated extensively on immediate task-related factors, such as technical requirements[20], and monitoring and controlling effort expenditure. However, the Non-elite group did not extensively focus on immediate task related factors during an event or during training. During an event seventy-five

---

20 Examples of these technical requirements were maintaining balance and rhythm on the run, and choosing the correct bike gear for a particular part of the course.

percent of the Non-elite group focussed on finishing the event[21], while during training, fifty percent had no specific focus, or focussed on non-task related factors such as food.

D) Mental Preparation

A one way anova of the PSIS R-5 mental preparation sub-scale (see Table 6 for group means and standard deviations) measuring frequency of imagery use, type of imagery, extent of pre-competition dreams, thinking about competition within 24 hours of an event, and perceived effectiveness of pre-event preparation, failed to reveal any significant between group differences, $F(2, 16) = .030$, n.s.

Table 6 - Mean Mental Preparation Scores (PSIS R-5).

	Mental Preparation*	Std. Dev.
Elite	62.00	13.97
Pre-elite	55.44	17.06
Non-elite	46.00	7.00

*(Mental Preparation Scores could range from 1-100).

In contrast to the above findings, the qualitative data revealed that the Elite and Pre-elite groups' mental preparations were more extensive than those of the Non-elite group. Table 7 presents the specific procedures which comprised each groups' pre-event mental preparations from the evening before the event up until the starting time.

---

[21] Although some Elite and Pre-elite triathletes did focus on finishing during an event, this was typically during the final stages of the event. One Elite triathlete suggested that focussing on the finish was not an efficient focus until the latter stages of the race.

Table 7 - Mental Preparations (Identified in Qualitative Interviews) Undertaken by the Elite, Pre-elite, and Non-elite Groups.

	Elite (n=9)	Pre-elite (n=6)	Non-elite (n=3)
1) Gear preparation	100%	83%	75%
2) Mental imagery	100%	100%	25%
3) Relaxation procedures	100%	67%	25%
4) Psyche-up	67%	50%	50%

1) Gear Preparation

The gear preparation undertaken before arriving at an event, and the preparation of gear in the "transition area"[22] once at the event, appeared to be an important part of each group's mental preparation:

> *"You feel confident if your gear is running right, and everything's working. You go over your maintenance. Having a clean cycle - it brings out the shine. You think it's a fast cycle, it looks clean, it looks fast. You've put a lot of time and effort into what you've done. You've presented yourself and your performance well. It will all bring it out and help you perform really well".* (Pre-elite triathlete).

---

22 "Transition areas" are where triathletes move from one discipline to the next; ie. the swim-bike transition, and the bike-run transition. Preparation of gear for the swim-bike transition entails consideration of factors such as setting out bicycling gear so that it can be changed into as quickly as possible, and ensuring that the bike is in the correct gear.

"Part of my mental preparation would be putting my gear all right in the transition area just perfect, and I get quite upset if it's been moved a couple of minutes later". (Pre-elite triathlete).

2) Mental Imagery

Both the Elite and Pre-elite groups made far more extensive use of mental imagery prior to an event than the Non-elite group (Elite, 100%; Pre-elite, 100%; Non-elite, 25%). The imagery was used by the majority of both groups to: familiarise themselves with course conditions in order to better gauge how to pace themselves; and/or, to mentally practice technical aspects of the race such as the transitions.

"I just go through what the course is like, imagine myself going up the hills or coming down the hills, how much energy I need to put in; what it's going to feel like when I get off the cycle, and how fast I've got to run". (Elite triathlete).

"You go over the course. You know the transitions, you go through the transitions. You know the cycling, the hills and the corners". (Pre-elite triathlete).

3) Relaxation Procedures

As already discussed, the focussing on anxiety control prior to an event differentiated the Elite and Pre-elite groups from the Non-elite group (Elite, 100%; Pre-elite, 67%; Non-elite, 25%). The two most popular anxiety control techniques being positive thinking and listening to music.

4) Psyche-up

Approximately thirty minutes before an event triathletes in each group (Elite, 67%; Pre-elite, 50%; Non-elite, 50%) started focussing on "psyching themselves up" for the race.

The term "Psyching-up", has been used by researchers (eg. Shelton & Mahoney, 1978; Weinberg, Gould, & Jackson, 1980) to refer to a process used by athletes to achieve an optimal and often heightened level of arousal prior to an event, in order to enhance performance. In this study, each group used music quite extensively and/or positive thinking to achieve an optimal level of arousal:

> *"Music. It's a really good one, really get into it. I have quite loud, heavy sort of fast beat music. I really like to get going with the beat".* (Pre-elite triathlete).

> *"I put a Walkman on, sometimes I go for a bit of a walk, and then especially when I'm travelling down to the race I'm pretty quiet. I sort of focus on the race and that's when I'm really intense, sort of mental periods when I'm really thinking hard, try to get aggressive and things like that. I'll be thinking about going hard all the time. Hard swim, hard ride and hard run".* (Elite triathlete).

There are several potential explanations for the inconsistencies in results found between the quantitative and qualitative measures of mental preparation. Firstly, the qualitative measure allowed skills to emerge that were not assessed in the PSIS R-5. Specifically, the qualitative measure revealed that relaxation procedures, which were not measured by the PSIS R-5, served to differentiate the Elite and Pre-elite groups from the Non-elite group. Secondly, one of the items in PSIS R-5 sub-scale may be less appropriate to triathlons than to other sports which require less preparation of equipment. However the inclusion of this item in the total sub-scale score may have reduced the likelihood of discovering significant between group differences.

The item in question 'penalised' athletes if they thought about their performance in the twenty-four hours prior to an event. However, a number of the triathletes indicated that anticipated weather conditions, as forecast during that period, often led them to fit dry or wet weather tyres, and also to consider factors such as how much liquid to consume during the race. The need for such decisions may induce triathletes to "think about" their performance during the twenty-four hours prior to an event.

E) Distraction Control

Although results from the qualitative data suggested that each group faced similar distractions such as fatigue, pain, and other competitors, only the Elite and Pre-elite groups employed distraction control techniques (Elite, 89%; Pre-elite, 100%). The two most commonly used techniques were positive thinking and focussing ahead:

> *"When people pass me I just tell myself that it's just another person that I can try and catch up with. I think that's one of the basic things I do for triathlon in my preparation and everything, just try and think as positively as possible".* (Pre-elite triathlete).

> *"On the cycle I try and look straight ahead. If I see someone biking ahead I try and focus on them and try and get up with them and that sort of stops me from looking sideways anyway".* (Pre-elite triathlete).

Another type of distraction faced by each group was mistakes made during or in preparation for an event. Both the Pre-elite and Non-elite groups reported that a lack of pacing was the most common mistake, whereas the most common mistake reported by the Elite group was a lack of preparation and organization. Although each group reported difficulty in recovering from a major mistake, both the Elite and Pre-elite groups used various techniques to promote

recovery. Again by far the most popular of these techniques were positive thinking and focussing ahead:

> *"I just sort of shrug them off and say o.k that's what's happened, it's just one of those things and you've just got to keep going. I believe that you've got to keep looking ahead and not behind. So the thing is it has happened and I have now got to look ahead and you can't dwell on what's happened. You can't change that. What you possibly can do is to try to change the future so you have try to do that rather than dwell on the past".* (Elite triathlete).

F) Post-Race Evaluation

Analysis of the qualitative data revealed that each of the three groups conducted some form of post race evaluation. However the post race evaluations of the Elite group were more extensive and detailed than those of the Pre-elite and Non-elite groups.

The Pre-elite and Non-elite groups when asked to describe their post-race evaluations tended to make very general statements such as:

> *"I suppose I think about how I did in each discipline. What I did wrong".* (Non-elite triathlete).

However the Elite group were generally far more specific about their evaluation procedures:

> *"The thing I try and do almost straight away is that I'll sit down with my diary and just run through completely what happened on that day, in as much detail as I can. Everything positive and especially everything negative because I don't want to repeat that*

again. I want to know how I handled that and how I'm going to handle that incident the next time. I'll sit down later on and analyse my build-up to that race and what was great about it, what was good about it, note that, make sure when I'm planning my next race, my next set of goals, make sure I include that, make sure I know that and this is something I must do more of, think about that on a daily basis and I'm sure it will help. And the same with the negative aspects, just make sure that they're not in that build-up or that I'm aware of them for the next race".

Overall the results provided only partial support for Hypothesis Two. Furthermore, there were marked inconsistencies between the quantitative and qualitative findings. The PSIS R-5 suggested that significant differences between the three groups were confined to only one of the four sub-scales used in this study, namely, the anxiety sub-scale. No significant differences were found on the motivation, concentration, and mental preparation sub-scales. However, despite these non-significant sub-scale results, the qualitative data revealed that there were considerable differences between the Elite and Non-elite, and Pre-elite and Non-elite groups in terms of these skills, although not between Elite and Pre-elite groups.

Notwithstanding these qualitative results there was only partial support for Hypothesis Two. Although there appeared to be quite considerable differences in psychological skills between the Elite and Non-elite groups, there were greater similarities between the Elite and Pre-elite groups than differences. Goal-setting procedures, anxiety control and control techniques, training and event focus, pre-event mental preparations, and event distraction control served mainly to differentiate the Elite and Pre-elite groups from the Non-elite group. The Elite and Pre-elite groups in contrast to the Non-elite group employed specific goal setting procedures. They appeared to control anxiety more effectively[23] and made more extensive use of anxiety

---

[23] Due to the grouping of PSIS R-5 sub-scale items measuring different aspects of a psychological skill, it was not possible to determine from the PSIS R-5 whether significant differences on the anxiety sub-scale related to anxiety control, absolute levels of anxiety, or both. However a closed ended question included in the qualitative interview to assess anxiety levels revealed that there were no significant between-group differences. This finding, combined with other data

control techniques. They focussed on task related factors (such as monitoring physiological arousal) during training and competition, as opposed to the Non-elite group who focussed on non-task related factors such as food, or on more distal factors, such as the finish of an event. They employed imagery and relaxation procedures as part of their pre-event mental preparations. Finally, both groups utilized distraction control techniques. The only apparent difference in psychological skills between the Elite and Pre-elite groups, was in their post-race evaluation procedures. The Elite group utilized far more extensive evaluation procedures than did both the Pre-elite group and the Non-elite group.

The finding that there were greater psychological skill differences between Elite and Non-elite groups, than between Elite and Pre-elite groups, was consistent with the findings of Mahoney, Gabriel, & Perkins (1987). Mahoney et al. noted that greater concentration, anxiety management, self-confidence, mental preparations, and motivation, served to differentiate the elite athletes from the non-elite athletes, whilst only greater concentration and anxiety management distinguished the elite athletes from the pre-elite athletes. Consistent with the findings of Mahoney et al., this study found that relative to Non-elite triathletes, Elite triathletes appeared to concentrate more effectively (ie. they concentrated on task related factors during training and competition), to have better control of anxiety, to be more confident, and to employ more extensive mental preparations. However, in contrast to Mahoney et al.'s findings, neither concentration nor anxiety management appeared to differentiate the Elite from the Pre-elite triathletes. The only apparent difference in the present study were the more extensive post-race evaluation procedures of the Elite group.

In terms of other studies which have examined a similar range of psychological skills, certain similarities were again apparent. As found by both Orlick & Partington (1988), and McCaffrey & Orlick (1989), the more successful athletes appear to be distinguishable from the less

---

from the qualitative interview which revealed that only the Elite and Pre-elite groups used anxiety control techniques, suggested that anxiety control rather than absolute levels of anxiety, may have accounted for the between group differences found on the PSIS R-5 anxiety sub-scale.

successful athletes in terms of psychological skills such as goal setting, imagery, mental preparations for competition, distraction control, and post-race evaluation procedures. However direct comparison with these studies is complicated by the differing criteria which have been used to define successful and less successful athletes. In Orlick and Partington's (1988) study, elite athletes were distinguished from less successful elite athletes, and in McCaffrey and Orlick's (1989) study elite golfers were distinguished from golf course teaching professionals. Furthermore in neither of these studies were non-elite athletes used as a third comparison group. Nonetheless, despite these inconsistencies between studies, it appears that more successful athletes may have more developed psychological skills than less successful athletes. However in terms of the criteria used in this study to distinguish successful from less successful athletes, these differences may be greatest between elite and non-elite athletes.

In summary, the psychological skills findings provided only weak support for the hypothesized psychological skill differences between Elite and Pre-elite/Non-elite groups. The skills differences[24] were far greater between the Elite v. Non-elite groups, and between the Pre-elite v. Non-elite groups, than between the Elite v. Pre-elite groups. In terms of specific psychological skills, goal-setting procedures, anxiety control, training and event focus, pre-event mental preparations, and event distraction control served to differentiate the Elite and Pre-elite groups from the Non-elite group. The only difference in psychological skills between the Elite and Pre-elite groups, appeared to be the Elite groups' more extensive post-race evaluation procedures.

---

[24] It is important to note that most of the reported psychological skills differences were based on frequency analyses of qualitative data, rather than the more formal analyses of the PSIS R-5 results, and thus caution should be urged when interpreting these results.

PART 3 - BENEFITS OF PSYCHOLOGICAL SKILLS

The benefits outlined below, and the percentage of each group attesting to each of the benefits, were derived from the qualitative interviews.

A) Goal-setting

Every triathlete that reported success in attaining goals emphasized the motivational impetus derived from this success:

> *"They've been a great motivating drive for me. When I saw my potential in the triathlon in the early 80's I got great motivation. I got that because I knew perhaps I might reach my goals. When I did my first, second, and third triathlon, I thought, "perhaps this is something for me", and when I saw myself winning national championships that was a great motivating factor for me, very important. And it still is. I don't know how motivated I would be if I didn't have a chance anymore".* (Elite triathlete).

B) Imagery

Table 8 below sets out the benefits that each group derived from the use of mental imagery.

Table 8 - Benefits of Mental Imagery.

	Elite (n=9)	Pre-elite (n=6)	Non-elite (n=3)
1) Confidence	44%	50%	-
2) Motivation	44%	17%	-
3) Relaxation	11%	33%	-

1) Confidence

Forty-four percent of the Elite group, and fifty percent of the Pre-elite group, but no members of the Non-elite group, reported that imagery led to increased confidence:

> *"The biggest benefit I think is if you've done enough imagery and it's gone through your mind, you know you're going to do well. It helps your confidence and helps your ability to race well. I'm sure of it".* (Pre-elite triathlete).

The types of imagery that led to increased confidence consisted of: visualizing the course and/or identifying what problems might occur and how to overcome these problems; and visualizing having a successful race.

2) Motivation

Forty-four percent of the Elite group, seventeen percent of the Pre-elite group, but no members of the Non-elite group, reported that imagery led to increased motivation:

> *"It helps me train better. It gets the adrenalin flowing and makes me train harder".* (Elite triathlete).

The types of imagery reported as being motivating included: visualizing being in a race while training; and visualizing having a successful race.

3) Relaxation

Eleven percent of the Elite group, thirty-three percent of the Pre-elite group, but no members of the Non-elite group, reported that imagery led to increased feelings of relaxation:

> *"It makes me relax so easily".* (Pre-elite triathlete).

The types of imagery that led to feelings of relaxation included: visualizing having a successful race; visualizing what problems might occur during the race and how to overcome them; and visualizing situations associated with relaxation.

C) Pre-event Mental Preparations

Table 9 outlines the benefits that each group derived from their pre-event mental preparations.

Table 9 - Benefits of Pre-event Mental Preparations.

	Elite (n=9)	**Pre-elite (n=6)**	**Non-elite (n=3)**
1) Confidence	89%	67%	-
2) Motivation	22%	17%	-
3) Optimal arousal	22%	-	-

1) Confidence

Eighty-nine percent of the Elite group, sixty-seven percent of the Pre-elite group, but no members of the Non-elite group, reported that their pre-event mental preparations enhanced feelings of self-confidence:

> *"Confidence probably. If everything's done, then there's no reason for anything to go wrong, so therefore nothing will go wrong".* (Elite triathlete).

2) Motivation

Twenty-two percent of the Elite group, seventeen percent of the Pre-elite group, but no members of the Non-elite group, indicated that pre-event mental preparation led to increased motivation:

> *"Well, I think it helps me achieve my optimum level of competition. By the time the race starts mentally I'm ready. I'm fully motivated at that stage. I really want to do the best I can, or win or whatever, whatever my goal is".* (Elite triathlete).

3) Optimal Arousal State

Twenty-two percent of the Elite group, but no members of the Pre-elite or Non-elite groups, reported that pre-event mental preparations led to an optimal arousal state:

> *"My mental preparations help me to get in the right state of arousal I think".* (Elite triathlete).

D) Post-race Evaluation

The benefits that each group derived from their post-race evaluations are outlined in Table 10.

Table 10 - Benefits of Post-race Evaluation.

	Elite (n=9)	Pre-elite (n=6)	Non-elite (n=3)
1) Confidence	11%	17%	-
2) Learning/ improvement	89%	67%	75%

1) Confidence

Eleven percent of the Elite group, and seventeen percent of the Pre-elite group, but no members of the Non-elite group, felt that their post-race evaluations increased their self-confidence:

> *"If you go over a race that you've just done, and you find aspects where you could've improved on and concentrate on them prior to the next event, then you're confident about yourself because you're aware that you've gone through it, and there's nothing more to do. You sort of feel better about yourself knowing that you've done all that you can".* (Elite triathlete).

2) Learning/improvement

Eighty-nine percent of the Elite group, sixty-seven percent of the Pre-elite group, and seventy-five percent of the Non-elite group, viewed post-race evaluations as part of a learning/improvement process:

> *"It's a lot better for your future races. You learn a lot from it. How the race could've gone and what you did wrong and how to correct that. I suppose it's mainly just a learning process".* (Pre-elite triathlete).

Based on the results from Part 3, there appeared to be some support for the hypothesis that psychological skills influence self-efficacy perceptions. Results also revealed that psychological skills affected variables other than self-efficacy. Psychological skills affected rate of improvement, motivation, and arousal levels, all of which in turn, according to Bandura's theory (1977; 1986), influence self-efficacy perceptions.

Interestingly, psychological skills were not equally influential in terms of self-efficacy enhancement across all three groups. Although results indicated that imagery, pre-event mental preparations, and post-race evaluations helped increase self-efficacy perceptions of members of the Elite and Pre-elite groups, these skills failed to increase the self-efficacy perceptions of the Non-elite group. Possibly contributing to this lack of self-efficacy enhancement was the relative under-development and under-utilization of the Non-elite group's psychological skills. This suggestion is particularly important given that much of the research that has been conducted to investigate the impact of psychological skills on self-efficacy has employed subjects with little or no prior experience of psychological skills. The use of unskilled subjects may have contributed to the lack of conclusive results noted by a number of researchers (eg. Wilkes & Summers, 1984; Weinberg, 1986; Woolfolk, Murphy, Gottesfeld, & Aitken, 1985).

In addition to the unequal influence of psychological skills across groups, the various psychological skills differed in terms of their perceived impact on self-efficacy, with pre-event mental preparations being the most influential skill, followed in order of influence by imagery, and post-race evaluation procedures. The greater perceived influence of pre-event mental preparations may have been due to the number of skills which characterised particularly the Elite and Pre-elite groups' preparations. Indeed, although the majority of previous research has attempted to determine the impact of isolated skills such as imagery (Woolfolk, Murphy, Gottesfeld, & Aitken, 1985) and verbal cues (Carnahan, Shea, and Davis, 1990) on self-efficacy, the results of this study suggest that psychological skills in combination may have a far greater impact on athletes' self-efficacy perceptions. This seems logical as skills such as realistic goal-setting and anxiety management interact. As noted by Bar-Eli, Tenebaum, & Elbaz (1989), unrealistic goals tend to promote heightened and non-optimal levels of anxiety. These unrealistic goals will in turn reduce the likelihood of athletes effectively managing their anxiety levels.

PART 4 - FACTORS INFLUENCING SELF-EFFICACY

The results presented and discussed below were derived from question 34 of the qualitative interview which asked triathletes to outline what factors influenced their self-confidence. Table 11 presents the factors identified by each of the groups.

Table 11 - Factors Influencing Self-efficacy.

	Elite (n=9)	Pre-elite (n=6)	Non-elite (n=3
1) Physical/ mental preparation	67%	33%	-
2) Motivation level	22%	-	25%
3) Anxiety control	-	-	25%
4) Previous performances	22%	83%	75%
5) Success in other sports	11%	17%	25%
6) Encouragement by others	11%	17%	50%
7) Relationships	11%	17%	-
8) Injuries	-	17%	-

1) Physical/Mental Preparation

Sixty-seven percent of the Elite group, thirty-three percent of the Pre-elite group, but no members of the Non-elite group, suggested that performance in training, and overall mental preparation (including factors such as achievement of pre-race goals and visualization) for an event, had a significant impact on self-efficacy:

> *"How you built up, and if you haven't had any niggling injuries or problems in your actual build-up in training and you're feeling really confident and you know you're really firing well. You've done a small race and you've fired and kicked well. You've gone through all those factors. If you're well prepared, you've visualised, you're focused. Your gear is running right, you've got everything working".* (Pre-elite triathlete).

"In terms of triathlons, it's very important that I suppose you could say I'm achieving my goals, my mini goals along the way which is basically the work-outs that I've planned for myself, and that I'm doing. It's very important that I'm achieving those. They're a part of building up to a race, achieving the mini goals along the way. It's very important to giving me the confidence just before that race. If everything's gone well I know I'm going to have a good race. It's as simple as that basically". (Elite triathlete).

2) Motivation level

Twenty-two percent of the Elite group, and twenty-five percent of the Non-elite group, but no members of the Pre-elite group, indicated that their motivation levels had a significant impact on self-efficacy perceptions:

"I don't feel confident all the time that I'm entirely motivated as I should be to reach the top, because I don't want to give up all the things that I enjoy; a social life and that type of thing, and having an hour to myself each day rather than feeling I have to be training. So I feel quite confident that I have the ability to succeed but I don't think I've got the required motivation at times". (Elite triathlete).

3) Anxiety control

Twenty-five percent of the Non-elite group, but no members of the Pre-elite or Elite groups, suggested that being able to relax would enhance self-efficacy perceptions:

"To be a lot more relaxed, although nervousness is natural. You can't help it. Before an event I'm a nervous wreck. I just can't do anything. I'll probably have my "Walkman" on and that and I'll have it up full bore and ignore everyone. I'd be just a nervous wreck". (Non-elite triathlete).

Amongst other factors that were reported as influencing self-efficacy perceptions were previous performances, performance successes in other sports, encouragement by others, relationships with family and friends, and injuries.

Twenty-two percent of the Elite group, eighty-three percent of the Pre-elite group, and seventy-five percent of the Non-elite group, indicated that previous performances influenced self-efficacy, whilst eleven percent of the Elite group, seventeen percent of the Pre-elite group, and twenty-five percent of the Non-elite group, reported that performance successes in other sports were significant determinants of self-efficacy. After these performance successes, the next most influential factor was encouragement by others (Elite group, 11%; Pre-elite, 17%; Non-elite, 50%). The two remaining influential factors were relationships with family and friends (Elite, 11%; Pre-elite, 17%), and injuries (Pre-elite, 17%).

Consistent with the findings from Part 3, Part 4 results provided some support for Hypothesis 3, which focussed on the relationship between psychological skills and self-efficacy. For the Elite group, physical/mental event preparation was perceived as the most influential factor with regard to self-efficacy perceptions. However the Pre-elite and Non-elite groups both rated previous performances[25] as the most influential factor. The between group differences in terms of factors perceived as most significantly affecting self-efficacy perceptions (Elite = physical/mental event preparation; Pre/Non-elite = previous performances) could possibly be explained by the more successful and consistent performance accomplishments of the Elite

---

[25] Although psychological skills are unlikely to be the sole determinant of performance accomplishments, findings from Part 3 suggested that skills such as post-race evaluation procedures may affect self-efficacy indirectly via their influence on performance accomplishments.

group who may have thus become less reliant on performance accomplishments as indicators of ability. Additionally, the Elite group may also have come to recognize the importance of mental preparations in ensuring this continued success. Thus self-efficacy perceptions amongst the Elite triathletes may have become more dependent upon mental preparations than upon previous performances particularly after a long history of performance success.

In a study which asked coaches to assess the effectiveness of both psychological and performance based strategies in enhancing athletes self-efficacy perceptions (Gould, Hodge, Peterson, & Gianini, 1989), the performance based strategies (eg. employ hard physical conditioning and improve technical skills), as predicted by Bandura (1977; 1986), received higher effectiveness ratings. However, the results of this study suggest that as athletes become increasingly successful, psychological skills may become more prevalent as a source of self-efficacy information. Thus coaches who wish to enhance less successful athletes' self-efficacy perceptions may need to focus primarily on performance based strategies; however once these physical skills have been acquired, coaches may then need to emphasize psychological skills if they are to further enhance their athletes' self-efficacy perceptions.

In addition to psychological skills and performance accomplishments, results also revealed that factors such as encouragement by others may also be important determinants of self-efficacy perceptions. Significantly, this suggests that if athletes' self-efficacy perceptions are to be maximised, then consideration must be given to broader issues than just the physical, technical, and psychological requirements of the sport.

Overall findings from Parts 3 and 4 provide some tentative support for the hypothesized psychological skills/self-efficacy relationship. However this influence of psychological skills on self-efficacy appeared to vary between groups, and between skills. The Elite and Pre-elite groups appeared to derive more benefits from psychological skills in terms of self-efficacy enhancement than did the Non-elite group. This may have been due to the less developed

psychological skills of the Non-elite group. As regards specific psychological skills, pre-event mental preparations appeared to be the most influential 'skill', this result perhaps being due to the number of skills which comprised each triathlete's mental preparation. Performance accomplishments were also found to influence particularly the the Non-elite and Pre-elite groups' self-efficacy perceptions. The greater importance of performance accomplishments in terms of self-efficacy enhancement for these two groups, suggests that coaches who wish to maximise the self-efficacy perceptions of their less successful athletes, may have to initially focus on performance based strategies before introducing psychological skills training.

Summarizing this combined results and discussion chapter, there was partial support for all three hypotheses:

Hypothesis 1 - With the exception of the Elite and Pre-elite groups on self-efficacy level scores, and as hypothesized, the Elite group had significantly greater self-efficacy perceptions than the Pre-elite or Non-elite triathletes.

Hypothesis 2 - As hypothesized the Elite triathletes appeared to have more developed psychological skills than the Non-elite triathletes. However, contrary to Hypothesis Two, there appeared to be few psychological skills differences between the Elite and Pre-elite groups.

Hypothesis 3 - As hypothesized, psychological skills did appear to have some influence on triathletes' self-efficacy perceptions. However, this influence varied both between groups and between psychological skills.

CHAPTER 5

GENERAL DISCUSSION

The findings of this study revealed that self-efficacy perceptions differentiated the Elite, Pre-elite and Non-elite groups, that psychological skill differences served mainly to differentiate the Elite/Pre-elite groups from the Non-elite group, and that psychological skills appeared to have some influence on self-efficacy perceptions.

Although the study failed to reveal psychological skill differences between all three groups of triathletes, it succeeded in highlighting that psychological skills may have influenced the triathletes' self-efficacy perceptions, and via these perceptions influenced their progression from lower to higher performance levels. However in contrast to the Non-elite/Pre-elite differences in terms of both psychological skills and self-efficacy perceptions, the Pre-elite/Elite comparisons revealed that self-efficacy perceptions alone served to differentiate these two groups. Given this finding it appears that psychological skills may have accounted for the greater self-efficacy perceptions of the Pre-elite group relative to the Non-elite group, but not the Elite group relative to the Pre-elite group.

Two factors which may have accounted for the Elite/Pre-elite self-efficacy differences, although not mentioned by the groups in this study, were physical maturity and technical expertise[26] . In an endurance sport such as triathlon the greater physical maturity of the Elite group, who had an average age of twenty seven years, compared to seventeen years for the Pre-elite group, could be expected to enhance their self-efficacy perceptions either directly (ie. feeling confident due to the knowledge of their greater stamina), or indirectly via its influence

---

[26] Although factors such as technical expertise may also have contributed to the greater self-efficacy perceptions of the Pre-elite group relative to the Non-elite group, the similarity in ages of the two groups helps preclude physical maturity as a possible determinant.

on performance accomplishments. The suggested influence of physical maturity is consistent with studies which have shown that performance in endurance events peaks in the late twenties and early thirties, for both men and women (Grogan, Wilson, Camm, 1991). Another factor which possibly contributed to the Elite triathletes' greater self-efficacy and superior performances, could have been their greater technical expertise. In the sport of triathlon, technical expertise comprises skills such as 'reading' water conditions, a skill which enables triathletes to calculate the quickest route to get around each buoy given existing surf and current conditions.

Despite having provided preliminary support for the hypothesized relationship between psychological skills and self-efficacy, a number of limitations of this study precluded a more definitive statement as regards this relationship. Amongst these limitations were an analysis of athletes from only one sport, and also the relatively small sample sizes. However although the sample sizes were small, the use of qualitative measures helped ensure that extensive in-depth information was obtained for each of the subjects. Given the time limitations of this study, the use of a larger sample sizes would have precluded the gathering of such in-depth information. As will be discussed shortly, this information helped to both expand upon, and clarify the findings from the quantitative measure of psychological skills.

In addition to these problems, self-report measures rather than actual performance times were used to assess self-efficacy perceptions. As noted by researchers such as Borkovec (1978) and Kazdin (1978) these types of measures may suffer from demand and suggestion problems. However these potential problems were at least partially negated by the initial categorization of triathletes into Elite, Pre-elite, and Non-elite based on performance ratings by a New Zealand triathlon selector. The self-efficacy findings consequently served to reinforce the accuracy of this initial coding.

Two other notable limitations were a lack of experimental manipulation of psychological skills to determine their influence on self-efficacy, and also the lack of an independent researcher to analyse the qualitative data. With regard to experimental manipulation, it would have been of great interest to evaluate the impact of a psychological skills training programme on triathletes' self-efficacy perceptions, particularly if in addition to a self-report measure, an actual performance measure of self-efficacy had been utilized. This type of experiment would have helped verify the reported self-efficacy benefits of psychological skills noted in this study. The lack of a second researcher to analyze the qualitative data was a significant limitation, particularly as this method of analysis was relatively new to the current researcher. However while acknowledging this limitation, the use of a quantitative measure of psychological skills helped provide a form of cross-reliability check (Patton, 1990).

In terms of the methodological implications of this study one key point emerged, namely the utility of employing qualitative measures of psychological skills. In this study, these measures enabled the researcher to expand upon and clarify findings from the quantitative measure. For example, the PSIS R-5 mental preparation sub-scale focussed only on measuring frequency of imagery use, type of imagery, extent of pre-competition dreams, thinking about competition within 24 hours of an event, and perceived effectiveness of pre-event preparation. The qualitative data revealed that relaxation procedures were also important factors in the Elite and Pre-elite groups' mental preparations.

In addition to expanding upon and clarifying findings from the quantitative measure, the open-ended questions used in this study helped to provide a form of cross-data validity check for the quantitative PSIS R-5. Specifically, the qualitative interview allowed for the differentiation of items assessing different aspects of a psychological skill, whereas items in each PSIS R-5 sub-scale, although measuring different aspects of a psychological skill, were grouped together to give a global sub-scale score. For example the PSIS R-5 motivation sub-scale employing six items to determine motivation levels, with one item only assessing goal-attainment, revealed no

significant between-group differences. However the open-ended questions examining goal-setting and motivation, which were individually analysed, revealed that only the Elite and Pre-elite groups reported success in goal-attainment. Yet although this result was clearly evident in the qualitative analysis in spite of a lack of statistical significance testing, the grouping of items in the PSIS R-5 precluded the differentiation necessary for this finding to emerge. In a similar manner, the qualitative data concerning mental preparations revealed that the Elite and Pre-elite groups used imagery to a far greater extent than the Non-elite groups, whereas the grouping of items in the PSIS R-5 again may have 'hidden' this finding.

FUTURE RESEARCH

Although, as already stated, limitations of this study precluded a more definitive statement as to the hypothesized relationship between psychological skills and self-efficacy, there was enough evidence to suggest that further investigation of this hypothesized relationship is warranted. As noted by previous researchers it appears that the concept of self-efficacy has potentially an important role to play in explaining and predicting sports performance (Feltz & Weiss, 1982; Wurtele, 1986; Feltz, 1988). Given this potential utility, future research goals should include a general evaluation of the impact of psychological skills training programmes on athletes' self-efficacy perceptions, and also an evaluation of the relative influence on self-efficacy perceptions of a variety of psychological skills. As found in this study, some psychological skills appear to be more influential in terms of self-efficacy than others. Furthermore, an experimental evaluation of the influence on self-efficacy perceptions of psychological skills in combination (eg. goal-setting and anxiety control), particularly if subjects were given more time to practice these skills, would provide a more definitive test of this hypothesized relationship.

Future research might also seek to determine if psychological skills are more effective in enhancing self-efficacy perceptions after the technical and physical aspects of the sport have been mastered.

Overall, these types of research goals would not only provide more definitive information as regards the relationship between psychological skills and self-efficacy, but also promote an understanding of how, and when, to best use psychological skills to enhance self-efficacy perceptions.

PRACTICAL APPLICATIONS OF THE CURRENT STUDY

The proposed practical applications of this study's findings must obviously be tempered by a realisation of its previously mentioned limitations. However the following two suggestions are particularly recommended.

Although psychological skills do appear to have some influence on the self-efficacy perceptions of athletes, coaches and athletes should not focus exclusively on psychological skills training to the exclusion of the technical and physical requirements of their sport. Particularly for less successful athletes, technical and physical training may have a greater influence on self-efficacy perceptions. However for more successful athletes, psychological skills may provide a very effective means of further enhancing self-efficacy perceptions.

Another implication of this study is that a wide range of factors influence the self-efficacy perceptions of athletes. In addition to psychological skills and performance accomplishments, factors such as encouragement by others, and relationships with family and friends, appear to have some effect on the self-efficacy perceptions of athletes. Therefore, if the self-efficacy

perceptions of athletes are to be maximized, then consideration must be given to aspects of their lives beyond the immediate sporting domain.

THE UTILITY OF BANDURA'S THEORY OF SELF-EFFICACY

As suggested at the beginning of this study there has been insufficient research addressing the issue of how to enhance athletes' self-efficacy perceptions. However one theory that has promoted some research in this area is Bandura's (1977; 1986) theory of self-efficacy. The strength of this theory is that it outlines both informational sources, and procedures operating via these sources, as means of influencing self-efficacy perceptions. According to Bandura, psychological skills, whatever their form, serve to enhance self-efficacy perceptions via four informational sources: performance accomplishments, vicarious experiences, verbal persuasion, and physiological states.

The findings of this study generally supported the hypothesized relationship between psychological skills and self-efficacy, and as noted by a number of researchers (eg. Feltz & Weiss, 1982; Wurtele, 1986; Feltz, 1988), it appears that Bandura's theory (1977; 1986) offers a powerful theoretical structure within which to investigate both the causes and effects of differing self-efficacy perceptions.

CHAPTER 6

CONCLUSIONS

Although previous research in the area of sport psychology has shown that elite athletes have greater self-efficacy perceptions and more developed psychological skills there has been little research evaluating their possible interrelationship. Bandura's theory of self-efficacy (1977; 1986) provides a powerful theoretical structure suggesting that the more developed psychological skills of elite athletes may contribute to their greater self-efficacy perceptions; these perceptions in turn, promoting superior athletic performance.

Based on an examination of Elite, Pre-elite, and Non-elite triathletes' psychological skills, and benefits derived from these skills, the following findings emerged:

1) There were significant differences between Elite, Pre-elite, and Non-elite triathletes in terms of ratings of self-efficacy. The Elite group had greater self-efficacy perceptions than the Pre-elite and Non-elite groups, and the Pre-elite group had greater self-efficacy perceptions than the Non-elite group.

2) There were some differences between Elite, Pre-elite, and Non-elite triathletes in terms of psychological skills, these skill differences being most evident between the Elite/Pre-elite groups and the Non-elite group. Goal-setting procedures, anxiety control, training and event focus, pre-event mental preparations, and event distraction control served to differentiate the Elite and Pre-elite groups from the Non-elite group. The only difference in psychological skills between the Elite and Pre-elite groups, appeared to be the use by the Elite group of more extensive post-race evaluation procedures.

3) Psychological skills appeared to influence self-efficacy perceptions. Furthermore, the more developed psychological skills of the Elite and Pre-elite groups may have contributed to their greater self-efficacy perceptions relative to the Non-elite group. Although factors such as technical expertise may have also been influential in terms of both the Elite and Pre-elite groups' greater self-efficacy perceptions, the similarity in ages between the Pre-elite and Non-elite groups suggested that it was unlikely that physical maturity was a possible determinant of the Pre-elite v. Non-elite self-efficacy differences. However the Elite and Pre-elite groups' similarities in terms of psychological skills indicated that other factors, such as physical maturity and technical expertise, may have accounted for the greater self-efficacy perceptions of the Elite group.

4) This research can be regarded as indicative only. The research was intensive in terms of individual subjects, but the small sample size, which restricted the use of statistical testing, and the study of only one sport, places limitations on the extent to which the results should be generalized. Furthermore, the reliance upon self-report data indicates a further need for caution.

5) Further research is needed to confirm and clarify the relationship between psychological skills and self-efficacy. Future research goals should include a general evaluation of the impact of psychological skills training on athletes' self-efficacy perceptions, an evaluation of the relative influence on self-efficacy of a variety of psychological skills, and an evaluation of the most appropriate stage in an athlete's development to introduce psychological skills training.

6) Bandura's theory of self-efficacy (1977; 1986) appears to offer a very promising framework within which to investigate means of enhancing self-efficacy perceptions.

BIBLIOGRAPHY

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. Psychological Review, 84(2), 191-215.

Bandura, A. (1982). Self-Efficacy Mechanism in Human Agency. American Psychologist, 37(2), 122-147.

Bandura, A. (1984). Recycling Misconceptions of Perceived Self-Efficacy. Cognitive Therapy and Research, 8(3), 231-255.

Bandura, A. (1986). Social Foundations of Thought and Action. A Social Cognitive Theory. Prentice Hall, Inc., Englewood Cliffs, New Jersey.

Bandura, A., & Adams, N. E. (1977). Analysis of Self-Efficacy Theory of Behavioral Change. Cognitive Therapy and Research, 1(4), 287-310.

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. Journal of Personality and Social Psychology, 45, 1017-1028.

Bar-Eli, M., Tenebaum, G., & Elbaz, G. (1989). Pre-Start Susceptibility to Psychological Crises in Competitive Sport: Theory and Research. International Journal of Sport Psychology, 20, 13-30.

Borkovec, T.D. Self-efficacy: Cause or reflection of behavioral change. In S. Rachman (Ed.). Advances in Behavior Research and Therapy. Oxford: Pergamon Press, 1978, pp. 163-170.

Carnahan, B. J., Shea, J. B., & Davis, G.S. (1990). Motivational Cue Effects on Bench-Press Performance and Self-Efficacy. Journal of Sport Behaviour, 13(4), 240-253.

Corbin, C. B., Laurie, D R., Gruger, C., & Smiley, B. (1984). Vicarious Success Experiences as a Factor Influencing Self-Confidence, Attitudes, and Physical Activity of Adult Women. Journal of Teaching in Physical Education, 4, 17-23.

Feltz, D. L. (1982). Path Analysis of the Causal Elements in Bandura's Theory of Self-Efficacy and an Anxiety-Based Model of Avoidance Behavior. Journal of Personality and Social Psychology, 4, 764-781.

Feltz, D. L. Self-Confidence and Sports Performance. In K. B. Pandolf (Ed.). Exercises and Sport Sciences Reviews. MacMillan Publishing Company, 1988, 423-457.

Feltz, D. L., Landers, D. M., & Raeder, V. (1979). Enhancing self-efficacy in high avoidance motor tasks: A comparison of modelling techniques. Journal of Sport Psychology, 1, 112-122.

Feltz, D. L., & Mungo, D. A. (1983). A Replication of the Path Analysis of the Causal Elements in Bandura's Theory of Self-Efficacy and the Influence of Autonomic Perception. Journal of Sport Psychology, 5, 263-277.

Feltz, D. L., & Riessinger, C. A. (1990). Effects of In Vivo Emotive Imagery and Performance Feedback on Self-Efficacy and Muscular Endurance. Journal of Sport and Exercise Psychology, 12, 132-143.

Feltz, D. L., & Weiss, M. R. (1982). Developing Self-Efficacy Through Sport. Journal of Physical Education, Recreation and Dance, 53(2), 24-26.

Gould, D., Hodge, K., Peterson, K., & Giannini, J. (1989). An Exploratory Examination of Strategies Used by Elite Coaches to Enhance Self-Efficacy in Athletes. Journal of Sport and Exercise Psychology, 11, 128-140.

Gould, D., & Weiss, M. (1981). The Effects of Model Similarity and Model Talk on Self-efficacy and Muscular Endurance. Journal of Sport Psychology, 3, 17-29.

Gould, D., Weiss, M., & Weinberg, R. (1981). Psychological Characteristics of Successful and Nonsuccessful Big Ten Wrestlers. Journal of Sport Psychology, 3, 69-81.

Grogan, T. J., Wilson, B. R. A., & Camm, J. D. (1991). The Relationship Between Age and Optimal Performance of Elite Athletes in Endurance Running Events. Research Quarterly for Exercise and Sport, 62(3), 333-339.

Hemery, D. (1986). Sporting Excellence: A study of sport's highest achievers. Champaign, IL.: Human Kinetics.

Highlen, P. S., & Bennett, B. B. (1983). Elite Divers and Wrestlers: A Comparison Between Open- and Closed-skill Athletes. Journal of Sport Psychology, 5, 390-409.

Kavanagh, D., & Hausfeld, S. (1986). Physical Performance and Self-Efficacy Under Happy and Sad Moods. Journal of Sport Psychology, 8, 112-123.

Kazdin, A.E. Conceptual and assessment issues raised by self-efficacy theory. In S. Rachman (Ed.). Advances in Behavior Research and Therapy, Vol. 1. Oxford: Pergamon Press, 1978, pp. 177-185.

Lan, L. Y., & Gill, D. L. (1984). The Relationships Among Self-Efficacy, Stress Responses, and a Cognitive Feedback Manipulation. Journal of Sport Psychology, 4, 227-238.

Lee, C. (1988). The Relationship Between Goal-Setting, Self-Efficacy, and Female Field Hockey Team Performance. International Journal of Sport Psychology, 20, 147-161.

Lrigg, C. D., & Feltz, D. L. (1991). Teacher Versus Peer Models Revisited: Effects on Motor Performance and Self-Efficacy. Research Quarterly for Exercise and Sport, 62(2), 217-224.

Mahoney, M.J. (1979). Cognitive skills and athletic performance. In P.C. Kendall & S.D. Hollon (Eds.), Cognitive-behavioral interventions: Theory, research, and procedures (pp.423-443). New York: Academic Press.

Mahoney, M.J. (Ed.) (1986). Clinical sport psychology. The Clinical Psychologist, 39(3), 64-81.

Mahoney, M. J. Sport Psychology. In I. S. Cohen (Ed.) The G. Stanley Hall Lecture Series, 1989, 4, 97-134. Washington, D. C.: American Psychological Association.

Mahoney, M. J., & Avener, M. (1977). Psychology of the Elite Athlete: An Exploratory Study. Cognitive Therapy and Research, 1(2), 135-141.

Mahoney, M.J., Avener, J., & Avener, M. (1983). Psychological aspects of competitive athletic performance. In L. Unesthal (Ed.), The mental aspects of gymnastics (pp. 54-66). Orebo, Sweeden: Veje.

Mahoney, M. J., Gabriel, T. J., & Perkins, T. S. (1987). Psychological Skills and Exceptional Athletic Performance. The Sport Psychologist, 1, 181-199.

Martens, R. (1987). Coaches guide to sport psychology. Champaign, IL: Human Kinetics.

McCauley, E. (1985). Modelling and Self-Efficacy: A Test of Bandura's Model. Journal of Sport Psychology, 7, 283-295.

McCaffrey, N., & Orlick, T. (1989). Mental Factors Related To Excellence Among Top Professional Golfers. International Journal of Sport Psychology, 20, 256-278.

Meyers, A. W., Cooke, C. J., Cullen, J., & Liles, L. (1979). Psychological Aspects of Athletic Competitors: A Replication Across Sports. Cognitive Therapy and Research, 3(4), 361-366.

Miles, M. B., & Huberman, A. M. (1984). Qualitative Data Analysis: A Sourcebook of New Methods. Beverly Hills, CA: Sage.

Miller, J. T., & McCauley, E. (1987). Effects of a Goal-Setting Training Program on Basketball Free-Throw Self-Efficacy and Performance. The Sport Psychologist, 1, 103-113.

Orlick, T., & Partington, J. (1988). Mental Links to Excellence. The Sport Psychologist, 2, 105-130.

Patton, M. Q. (1990). Qualitative Evaluation and Research Methods (2nd Ed.). Sage Publications Inc.

Shelton, T.O., & Mahoney, M.J. (1978). The content and effect of "psyching-up" strategies in weightlifters. Cognitive Therapy and Research, 2, 275-284.

Spink, K. S. (1989). Psychological characteristics of male gymnasts: Differences between competitive levels. Journal of Sports Sciences, 8, 149-157.

Spink, K. S. (1990). Collective Efficacy in the Sport Setting. International Journal of Sport Psychology, 21, 380-395.

Suinn, R.M. (1987). Behavioral approaches to stress management in sports. In J.R. May & M.J. Askew (Eds.), Sport psychology: The psychological health of the athlete (pp. 59-75). New York: PMA Publishing.

Weinberg, R. (1986). Relationship Between Self-Efficacy and Cognitive Strategies in Enhancing Endurance Performance. International Journal of Sport Psychology, 17, 280-292.

Weinberg, R.S., Gould, D., & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. Journal of Sport Psychology, 1, 320-331.

Weinberg, R. S., Gould, D., & Jackson, A. (1980). Cognition and Motor Performance: Effect of Psyching-Up Strategies on Three Motor Tasks. Cognitive Therapy and Research, 4(2), 239-245.

Weinberg, R. S., Gould, D., Yukelson, D., & Jackson, A. (1981). The Effect of Preexisting and Manipulated Self-efficacy on a Competitive Muscular Endurance Task. Journal of Sport Psychology, 4, 345-354.

Weinberg, R. S., Yukelson, D., & Jackson, A. (1980). Effect of public and private efficacy expectations on competitive performance. Journal of Sport Psychology, 2, 340-349.

Wilkes, R. L., & Summers, J.J. (1984). Cognitions, Mediating Variables, and Strength Performance. Journal of Sport Psychology, 6, 351-359.

Williams, J.M. (1986). Psychological characteristics of peak performance. In J.M. Williams (Ed.), Applied Sport Psychology: Personal growth to peak performance (pp. 123-132). Palo Alto, CA: Mayfield.

Woolfolk, R. L., Murphy, S. M., Gottesfeld, D., & Aitken, D. (1985). Effects of Mental Rehearsal of Task Motor Activity and Mental Depiction of Task Outcome on Motor Skill Performance. Journal of Sport Psychology, 7, 191-197.

Wurtele, S. K. (1986). Self-Efficacy and Athletic Performance: A Review. Journal of Social and Clinical Psychology, 4(3), 290-301.

APPENDIX 1:

Male and Female Self-Efficacy Questionnaires:

Triathlon self-efficacy questionnaire (Male):

1) If you were peaking for a standard course triathlon (1.5k swim, 40k cycle, 10k run) where the following conditions applied;

swim - flat lake, still overcast conditions
cycle - flat course, still overcast conditions
run - flat course, still overcast conditions

what best time would you be capable of achieving? Please circle this time.

2.59 - 3.00
2.58 - 2.59
2.57 - 2.58
2.56 - 2.57
2.55 - 2.56
2.54 - 2.55
2.53 - 2.54
2.52 - 2.53
2.51 - 2.52
2.50 - 2.51
2.49 - 2.50
2.48 - 2.49
2.47 - 2.48
2.46 - 2.47
2.45 - 2.46
2.44 - 2.45
2.43 - 2.44
2.42 - 2.43
2.41 - 2.42
2.40 - 2.41
2.39 - 2.40
2.38 - 2.39
2.37 - 2.38
2.36 - 2.37
2.35 - 2.36
2.34 - 2.35
2.33 - 2.34
2.32 - 2.33
2.31 - 2.32
2.30 - 2.31
2.29 - 2.30
2.28 - 2.29
2.27 - 2.28
2.26 - 2.27
2.25 - 2.26
2.24 - 2.25
2.23 - 2.24
2.22 - 2.23
2.21 - 2.22
2.20 - 2.21
2.19 - 2.20

2.18 - 2.19
2.17 - 2.18
2.16 - 2.17
2.15 - 2.16
2.14 - 2.15
2.13 - 2.14
2.12 - 2.13
2.11 - 2.12
2.10 - 2.11
2.09 - 2.10
2.08 - 2.09
2.07 - 2.08
2.06 - 2.07
2.05 - 2.06
2.04 - 2.05
2.03 - 2.04
2.02 - 2.03
2.01 - 2.02
2.00 - 2.01
1.59 - 2.00
1.58 - 1.59
1.57 - 1.58
1.56 - 1.57
1.55 - 1.56
1.54 - 1.55
1.53 - 1.54
1.52 - 1.53
1.51 - 1.52
1.50 - 1.51
1.49 - 1.50
1.48 - 1.49
1.47 - 1.48

2) Again assuming you were peaking for this race, how confident would you feel about achieving the times listed below.

Please indicate your level of confidence on a scale of 1 - 10 for each of the times. 1 = unlikely to achieve the time 10 = totally certain of achieving the time 5 = moderately confident of achieving the time.

	Unlikely to Achieve				Moderately Confident				Would Achieve	
2.59 - 3.00	1	2	3	4	5	6	7	8	9	10
2.58 - 2.59	1	2	3	4	5	6	7	8	9	10
2.57 - 2.58	1	2	3	4	5	6	7	8	9	10
2.56 - 2.57	1	2	3	4	5	6	7	8	9	10
2.55 - 2.56	1	2	3	4	5	6	7	8	9	10
2.54 - 2.55	1	2	3	4	5	6	7	8	9	10
2.53 - 2.54	1	2	3	4	5	6	7	8	9	10
2.52 - 2.53	1	2	3	4	5	6	7	8	9	10
2.51 - 2.52	1	2	3	4	5	6	7	8	9	10
2.50 - 2.51	1	2	3	4	5	6	7	8	9	10
2.49 - 2.50	1	2	3	4	5	6	7	8	9	10
2.48 - 2.49	1	2	3	4	5	6	7	8	9	10

2.47 - 2.48	1	2	3	4	5	6	7	8	9	10
2.46 - 2.47	1	2	3	4	5	6	7	8	9	10
2.45 - 2.46	1	2	3	4	5	6	7	8	9	10
2.44 - 2.45	1	2	3	4	5	6	7	8	9	10
2.43 - 2.44	1	2	3	4	5	6	7	8	9	10
2.42 - 2.43	1	2	3	4	5	6	7	8	9	10
2.41 - 2.42	1	2	3	4	5	6	7	8	9	10
2.40 - 2.41	1	2	3	4	5	6	7	8	9	10
2.39 - 2.40	1	2	3	4	5	6	7	8	9	10
2.38 - 2.39	1	2	3	4	5	6	7	8	9	10
2.37 - 2.38	1	2	3	4	5	6	7	8	9	10
2.36 - 2.37	1	2	3	4	5	6	7	8	9	10
2.35 - 2.36	1	2	3	4	5	6	7	8	9	10
2.34 - 2.35	1	2	3	4	5	6	7	8	9	10
2.33 - 2.34	1	2	3	4	5	6	7	8	9	10
2.32 - 2.33	1	2	3	4	5	6	7	8	9	10
2.31 - 2.32	1	2	3	4	5	6	7	8	9	10
2.30 - 2.31	1	2	3	4	5	6	7	8	9	10
2.29 - 2.30	1	2	3	4	5	6	7	8	9	10
2.28 - 2.29	1	2	3	4	5	6	7	8	9	10
2.27 - 2.28	1	2	3	4	5	6	7	8	9	10
2.26 - 2.27	1	2	3	4	5	6	7	8	9	10
2.25 - 2.26	1	2	3	4	5	6	7	8	9	10
2.24 - 2.25	1	2	3	4	5	6	7	8	9	10
2.23 - 2.24	1	2	3	4	5	6	7	8	9	10
2.22 - 2.23	1	2	3	4	5	6	7	8	9	10
2.21 - 2.22	1	2	3	4	5	6	7	8	9	10
2.20 - 2.21	1	2	3	4	5	6	7	8	9	10
2.19 - 2.20	1	2	3	4	5	6	7	8	9	10
2.18 - 2.19	1	2	3	4	5	6	7	8	9	10
2.17 - 2.18	1	2	3	4	5	6	7	8	9	10
2.16 - 2.17	1	2	3	4	5	6	7	8	9	10
2.15 - 2.16	1	2	3	4	5	6	7	8	9	10
2.14 - 2.15	1	2	3	4	5	6	7	8	9	10
2.13 - 2.14	1	2	3	4	5	6	7	8	9	10
2.12 - 2.13	1	2	3	4	5	6	7	8	9	10
2.11 - 2.12	1	2	3	4	5	6	7	8	9	10
2.10 - 2.11	1	2	3	4	5	6	7	8	9	10
2.09 - 2.10	1	2	3	4	5	6	7	8	9	10
2.08 - 2.09	1	2	3	4	5	6	7	8	9	10
2.07 - 2.08	1	2	3	4	5	6	7	8	9	10
2.06 - 2.07	1	2	3	4	5	6	7	8	9	10
2.05 - 2.06	1	2	3	4	5	6	7	8	9	10
2.04 - 2.05	1	2	3	4	5	6	7	8	9	10
2.03 - 2.04	1	2	3	4	5	6	7	8	9	10
2.02 - 2.03	1	2	3	4	5	6	7	8	9	10
2.01 - 2.02	1	2	3	4	5	6	7	8	9	10
2.00 - 2.01	1	2	3	4	5	6	7	8	9	10
1.59 - 2.00	1	2	3	4	5	6	7	8	9	10
1.58 - 1.59	1	2	3	4	5	6	7	8	9	10
1.57 - 1.58	1	2	3	4	5	6	7	8	9	10
1.56 - 1.57	1	2	3	4	5	6	7	8	9	10
1.55 - 1.56	1	2	3	4	5	6	7	8	9	10
1.54 - 1.55	1	2	3	4	5	6	7	8	9	10
1.53 - 1.54	1	2	3	4	5	6	7	8	9	10
1.52 - 1.53	1	2	3	4	5	6	7	8	9	10
1.51 - 1.52	1	2	3	4	5	6	7	8	9	10

1.50 - 1.51	1	2	3	4	5	6	7	8	9	10
1.49 - 1.50	1	2	3	4	5	6	7	8	9	10
1.48 - 1.49	1	2	3	4	5	6	7	8	9	10
1.47 - 1.48	1	2	3	4	5	6	7	8	9	10

Triathlon self-efficacy questionnaire (Female):

1) If you were peaking for a standard course triathlon (1.5k swim, 40k cycle, 10k run) where the following conditions applied;

swim - flat lake, still overcast conditions
cycle - flat course, still overcast conditions
run - flat course, still overcast conditions

what best time would you be capable of achieving? Please circle this time.

2.59 - 3.00
2.58 - 2.59
2.57 - 2.58
2.56 - 2.57
2.55 - 2.56
2.54 - 2.55
2.53 - 2.54
2.52 - 2.53
2.51 - 2.52
2.50 - 2.51
2.49 - 2.50
2.48 - 2.49
2.47 - 2.48
2.46 - 2.47
2.45 - 2.46
2.44 - 2.45
2.43 - 2.44
2.42 - 2.43
2.41 - 2.42
2.40 - 2.41
2.39 - 2.40
2.38 - 2.39
2.37 - 2.38
2.36 - 2.37
2.35 - 2.36
2.34 - 2.35
2.33 - 2.34
2.32 - 2.33
2.31 - 2.32
2.30 - 2.31
2.29 - 2.30
2.28 - 2.29
2.27 - 2.28
2.26 - 2.27
2.25 - 2.26
2.24 - 2.25
2.23 - 2.24
2.22 - 2.23
2.21 - 2.22
2.20 - 2.21
2.19 - 2.20
2.18 - 2.19
2.17 - 2.18
2.16 - 2.17
2.15 - 2.16
2.14 - 2.15

2.13 - 2.14
2.12 - 2.13
2.11 - 2.12
2.10 - 2.11
2.09 - 2.10
2.08 - 2.09
2.07 - 2.08
2.06 - 2.07
2.05 - 2.06
2.04 - 2.05
2.03 - 2.04
2.02 - 2.03
2.01 - 2.02
2.00 - 2.01
1.59 - 2.00
1.58 - 1.59
1.57 - 1.58

2) Again assuming you were peaking for this race, how confident would you feel about achieving the times listed below.

Please indicate your level of confidence on a scale of 1 - 10 for each of the times. 1 = unlikely to achieve the time 10 = totally certain of achieving the time 5 = moderately confident of achieving the time.

	Unlikely to Achieve				Moderately Confident					Would Achieve
2.59 - 3.00	1	2	3	4	5	6	7	8	9	10
2.58 - 2.59	1	2	3	4	5	6	7	8	9	10
2.57 - 2.58	1	2	3	4	5	6	7	8	9	10
2.56 - 2.57	1	2	3	4	5	6	7	8	9	10
2.55 - 2.56	1	2	3	4	5	6	7	8	9	10
2.54 - 2.55	1	2	3	4	5	6	7	8	9	10
2.53 - 2.54	1	2	3	4	5	6	7	8	9	10
2.52 - 2.53	1	2	3	4	5	6	7	8	9	10
2.51 - 2.52	1	2	3	4	5	6	7	8	9	10
2.50 - 2.51	1	2	3	4	5	6	7	8	9	10
2.49 - 2.50	1	2	3	4	5	6	7	8	9	10
2.48 - 2.49	1	2	3	4	5	6	7	8	9	10
2.47 - 2.48	1	2	3	4	5	6	7	8	9	10
2.46 - 2.47	1	2	3	4	5	6	7	8	9	10
2.45 - 2.46	1	2	3	4	5	6	7	8	9	10
2.44 - 2.45	1	2	3	4	5	6	7	8	9	10
2.43 - 2.44	1	2	3	4	5	6	7	8	9	10
2.42 - 2.43	1	2	3	4	5	6	7	8	9	10
2.41 - 2.42	1	2	3	4	5	6	7	8	9	10
2.40 - 2.41	1	2	3	4	5	6	7	8	9	10
2.39 - 2.40	1	2	3	4	5	6	7	8	9	10
2.38 - 2.39	1	2	3	4	5	6	7	8	9	10
2.37 - 2.38	1	2	3	4	5	6	7	8	9	10
2.36 - 2.37	1	2	3	4	5	6	7	8	9	10
2.35 - 2.36	1	2	3	4	5	6	7	8	9	10
2.34 - 2.35	1	2	3	4	5	6	7	8	9	10
2.33 - 2.34	1	2	3	4	5	6	7	8	9	10

2.32 - 2.33	1	2	3	4	5	6	7	8	9	10
2.31 - 2.32	1	2	3	4	5	6	7	8	9	10
2.30 - 2.31	1	2	3	4	5	6	7	8	9	10
2.29 - 2.30	1	2	3	4	5	6	7	8	9	10
2.28 - 2.29	1	2	3	4	5	6	7	8	9	10
2.27 - 2.28	1	2	3	4	5	6	7	8	9	10
2.26 - 2.27	1	2	3	4	5	6	7	8	9	10
2.25 - 2.26	1	2	3	4	5	6	7	8	9	10
2.24 - 2.25	1	2	3	4	5	6	7	8	9	10
2.23 - 2.24	1	2	3	4	5	6	7	8	9	10
2.22 - 2.23	1	2	3	4	5	6	7	8	9	10
2.21 - 2.22	1	2	3	4	5	6	7	8	9	10
2.20 - 2.21	1	2	3	4	5	6	7	8	9	10
2.19 - 2.20	1	2	3	4	5	6	7	8	9	10
2.18 - 2.19	1	2	3	4	5	6	7	8	9	10
2.17 - 2.18	1	2	3	4	5	6	7	8	9	10
2.16 - 2.17	1	2	3	4	5	6	7	8	9	10
2.15 - 2.16	1	2	3	4	5	6	7	8	9	10
2.14 - 2.15	1	2	3	4	5	6	7	8	9	10
2.13 - 2.14	1	2	3	4	5	6	7	8	9	10
2.12 - 2.13	1	2	3	4	5	6	7	8	9	10
2.11 - 2.12	1	2	3	4	5	6	7	8	9	10
2.10 - 2.11	1	2	3	4	5	6	7	8	9	10
2.09 - 2.10	1	2	3	4	5	6	7	8	9	10
2.08 - 2.09	1	2	3	4	5	6	7	8	9	10
2.07 - 2.08	1	2	3	4	5	6	7	8	9	10
2.06 - 2.07	1	2	3	4	5	6	7	8	9	10
2.05 - 2.06	1	2	3	4	5	6	7	8	9	10
2.04 - 2.05	1	2	3	4	5	6	7	8	9	10
2.03 - 2.04	1	2	3	4	5	6	7	8	9	10
2.02 - 2.03	1	2	3	4	5	6	7	8	9	10
2.01 - 2.02	1	2	3	4	5	6	7	8	9	10
2.00 - 2.01	1	2	3	4	5	6	7	8	9	10
1.59 - 2.00	1	2	3	4	5	6	7	8	9	10
1.58 - 1.59	1	2	3	4	5	6	7	8	9	10
1.57 - 1.58	1	2	3	4	5	6	7	8	9	10
1.56 - 1.57	1	2	3	4	5	6	7	8	9	10

APPENDIX 2:

PSYCHOLOGICAL SKILLS INVENTORY FOR SPORTS

The statements below deal with various aspects of athletic performance and competition. Please rate each statement according to how well it describes your own personal experience. Fill in the circles to the right that corresponds to how strongly you agree with it. Please be sure to rate each statement.

	Strongly Disagree				Strongly Agree
1) I am very motivated to do well in my sport	0	0	0	0	0
2) I often have trouble concentrating during my performance	0	0	0	0	0
3) I often dream about competition	0	0	0	0	0
4) I am very self-confident about my athletic skills	0	0	0	0	0
5) I get very frustrated when a teammate is performing poorly	0	0	0	0	0
6) I am more tense before I perform than I am during performance	0	0	0	0	0
7) I try not to think about my performance during the twenty four hours before a game	0	0	0	0	0
8) I experience frequent "hot streaks" in which my performance is unusually good	0	0	0	0	0
9) I sometimes lack the motivation to train	0	0	0	0	0
10) I get along very well with other members of a team	0	0	0	0	0
11) I am seldom so tense that it interferes with my performance	0	0	0	0	0
12) Winning is very important to me	0	0	0	0	0
13) I often "rehearse" my performance in my head just before I perform	0	0	0	0	0
14) In most competitions I go in confident that I will do well	0	0	0	0	0
15) I tend to perform better when I feel more tense than less tense	0	0	0	0	0
16) When I am actually performing, I am almost totally unaware of the audience	0	0	0	0	0

7) When I am performing poorly I tend to lose my concentration	0	0	0	0	0
8) It doesn't take much to shake my self-confidence	0	0	0	0	0
9) I concentrate more on my own performance than on the performance of the team	0	0	0	0	0
20) I am often panic struck during those last few moments before I begin my performance	0	0	0	0	0
21) When I make a mistake, I have trouble forgetting it and concentrating on my ongoing performance	0	0	0	0	0
22) I would like to be more motivated	0	0	0	0	0
23) A minor injury or a bad practice can really shake my self-confidence	0	0	0	0	0
24) I set goals for myself and usually achieve them	0	0	0	0	0
25) I sometimes feel intense anxiety while I am actually performing	0	0	0	0	0
26) During my performance, my attention seems to slip back and forth between what I am doing and other things	0	0	0	0	0
27) I enjoy working with teammates	0	0	0	0	0
28) I have frequent doubts about my athletic ability	0	0	0	0	0
29) I spend a lot of energy trying to stay calm before a meet	0	0	0	0	0
30) When I begin to perform poorly, my confidence drops very quickly	0	0	0	0	0
31) I think team spirit is very important	0	0	0	0	0
32) I worry a lot about making mistakes in an important meet	0	0	0	0	0
33) When I mentally practice I "see" myself performing (well) just like I was watching a videotape	0	0	0	0	0
34) I can usually remain confident even through one of my poorer performances	0	0	0	0	0
35) When I am preparing to perform I try to imagine what it would <u>feel</u> like in my muscles	0	0	0	0	0
36) My self-confidence jumps all over the place	0	0	0	0	0

37) When my team loses, I feel badly - no matter how well I did as an individual	0	0	0	0	0
38) When I make an error in my performance, I become very anxious	0	0	0	0	0
39) Right now the most important thing in my life is to do well in my sport	0	0	0	0	0
40) I am good at controlling my tension level	0	0	0	0	0
41) My anxiety level drops rapidly as soon as I begin my performance	0	0	0	0	0
42) My sport is my whole life	0	0	0	0	0
43) I have always worked well with my coaches	0	0	0	0	0
44) I have faith in myself	0	0	0	0	0
45) When it comes down to the last hours before a game I often wish that I was better prepared.	0	0	0	0	0

APPENDIX 3:

PSIS R-5 Items Grouped Under Sub-Scale Headings:

MOTIVATION:

1) I am very motivated to do well in my sport
2) I sometimes lack the motivation to train
3) Winning is very important to me
4) I would like to be more motivated
5) I set goals for myself and usually achieve them
6) Right now the most important thing in my life is to do well in my sport
7) My sport is my whole life

ANXIETY:

1) I am more tense before I perform than I am during performance
2) I am seldom so tense that it interferes with my performance
3) I tend to perform better when I feel more tense than less tense
4) I am often panic struck during those last few moments before I begin my performance
5) I sometimes feel intense anxiety while I am actually performing
6) I spend a lot of energy trying to stay calm before a meet
7) I worry a lot about making mistakes in an important meet
8) When I make an error in my performance, I become very anxious
9) I am good at controlling my tension level
10) My anxiety level drops rapidly as soon as I begin my performance

CONCENTRATION:

1) I often have difficulty concentrating during my performance
2) I experience frequent "hot streaks" in which my performance is unusually good
3) When I am actually performing, I am almost totally unaware of the audience
4) When I am performing poorly I tend to lose my concentration

5) When I make a mistake, I have trouble forgetting it and concentrating on my ongoing performance

6) During my performance, my attention seems to slip back and forth between what I am doing and other things

MENTAL PREPARATION:

1) I often dream about competition

2) I try not to think about my performance during the twenty four hours before a game

3) I often "rehearse" my performance in my head just before I perform

4) When I mentally practice I "see" myself performing (well) just like I was watching a videotape

5) When I am preparing to perform I try to imagine what it would feel like in my muscles

6) When it comes down to the last hours before a game I often wish that I was better prepared.

CONFIDENCE:

1) I am very self-confident about my athletic skills

2) In most competitions I go in confident that I will do well

3) It doesn't take much to shake my self-confidence

4) A minor injury or a bad practice can really shake my self-confidence

5) I have frequent doubts about my athletic ability

6) When I begin to perform poorly, my confidence drops very quickly

7) I can usually remain confident even through one of my poorer performances

8) My self-confidence jumps all over the place

9) I have faith in myself

TEAM EMPHASIS:

1) I get very frustrated when a teammate is performing poorly

2) I get along very well with other members of a team

3) I concentrate more on my own performance than on the performance of the team

4) I enjoy working with teammates

5) I think team spirit is very important

6) When my team loses, I feel badly - no matter how well I did as an individual

7) I have always worked well with my coaches

APPENDIX 4:

Qualitative Interview:

A) GOAL SETTING AND MOTIVATION:

1) What goals have you set for yourself as regards

a) Your next competitive season?
b) Your long term goals in the sport?

2) What procedure(s) did you go through in deciding on these goals?

3) a) Did you talk to anyone else before deciding on these goals and if so who?

b) What effect did talking to this person have on the goals you set yourself?

4) How successful have you been in meeting the goals you have set yourself?

5) What effect has attainment/non attainment of these goals had on your motivation to train for and compete in triathlons?

6) What are your motives for training and competing in triathlons?

B) ANXIETY:

7) What do you think about

a) The evening before the event?
b) Two hours before the event?
c) Half an hour before the event?
d) During the event?

8) What particular feelings/emotions do you experience

a) The evening before the event?
b) Two hours before the event?
c) Half an hour before the event?
d) During the event?

9) What influences the way you feel physically and mentally before an event?

10) Rate on a scale of one to seven your level of anxiety at the following times (1= not anxious at all 7= extremely anxious)

a) The evening before the event?
b) Two hours before the event?
c) Half an hour before the event?
d) During the event?

11) In what ways does anxiety before or during an event affect your performance in the event?

12) What methods do you use to control your arousal levels?

13) What level of arousal at the following times, on a scale of 1-7 (1= totally relaxed 7= highly aroused), leads to your best competitive performance

a) Half an hour before the event?
b) During the event?

14) How difficult do you find it to attain these levels?

C) CONCENTRATION SKILLS:

15) What do you focus on when you're training ?

16) What do you focus on both before and during an event?

17) How do you maintain your competition focus?

18) To what extent do you focus on how your body is feeling

a) When training ?
b) When competing ?

D) PRE-COMPETITION PSYCHOLOGICAL PLAN:

19) How often, if at all, do you practice mental imagery per day or per week?

20) What benefits do you derive from use of mental imagery?

21) What mental preparations do you go through to most effectively prepare for an event?

22) What do these mental preparations help you achieve ?

E) EVENT DISTRACTION CONTROL:

23) What kind of distractions do you face while competing?

24) What psychological techniques do you use to control these distractions?

25) Of the psychological techniques you have used to overcome distractions which would you rate as the most and least effective?

26) What type of mistakes/miscalculations have you made while competing?

27) How difficult do you find it to mentally recover from these mistakes?

28) What psychological techniques do you use to help you mentally recover from these mistakes?

F) POST-RACE EVALUATIONS:

29) What evaluation of your performance do you undertake after each event?

30) How soon after your event do you undertake this evaluation?

31) When conducting the evaluation do you seek other peoples opinions/advice, and if so which people?

32) What benefits do you derive from these evaluations?

G) SELF-CONFIDENCE:

33) How confident do you feel about your athletic ability and capacity to perform successfully?

34) What factors contribute to your feelings of confidence?